

Operation Manual

PQ 500-Series Ascenders (Except AX Model)

Edition 5 - April 2008

PowerQuick®

Powered Personnel Ascender

The Easy Way to Climb

*Taking You to Greater
Heights Quickly,
Inexpensively,
and Safely*

PowerQuick Inc.

www.powerquickinc.com

775-882-8100

Disclaimer

The PowerQuick Personal Ascender is not a safety device. It is specifically designed as a tool to assist in the ascending and descending of personnel and tools or materials and is always to be used in conjunction with a secondary safety device.

PowerQuick, Inc. makes no guarantee that PowerQuick will increase the user's personal safety or free the user from possible serious injury or death or that PowerQuick operates as a life-saving mechanism.

PowerQuick, Inc. our partners and subsidiaries disclaim any liability or responsibility for damages, injuries or death resulting from the use or misuse of the PowerQuick Ascender.

The PowerQuick Ascender should not be operated by persons who do not possess evidence of approved training in the use of the PowerQuick Ascender or hold at least a level 1 IRATA Rope Access Technician rating or similar certification. However, even with this requirement, PowerQuick, Inc has no control over the use of this equipment and the person using this equipment assumes all risk of damage, injuries or death resulting from such use. It is expressly understood and agreed by the buyer or any subsequent user of the PowerQuick Ascender that PowerQuick, Inc. and/or the seller in no way be deemed or held liable or accountable for any liability or responsibility for damages, injuries or death resulting from the use of the PowerQuick Ascender, and makes no warranty, either expressed or implied, statutory, by operation of law or otherwise, beyond that expressed herein.

PowerQuick, Inc. disclaims any liability in tort for damages or direct or consequential personal injuries or death resulting from a malfunction or from a defect in design, manufacturing, materials or workmanship, whether caused by negligence on the part of PowerQuick, Inc. or otherwise. By using PowerQuick Personal Ascender, or allowing it to be used by others, the buyer and/or user waives any liability on the part of PowerQuick, Inc. for personal injuries, death or other damages arising from such use.

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PowerQuick Powered Personnel Ascender Model PQ 500-1

Operations Manual & System Information for Work Positioning Use and Safety

EC Declaration of Conformity	
Conforming Equipment	PowerQuick Model 500 -1 Powered Personal Ascender for technical rope access, work positioning and rescue operations.
Manufactured by	PowerQuick, Inc. 3000-B Conestoga Drive, Carson City, NV89706
<p>We declare that the equipment complies with the following directives including the latest amendments: -</p> <ul style="list-style-type: none"> • 98/37/EC Machinery Safety • 2004/108/EC Electromagnetic Compatibility <p>Provided it is used and maintained by competent personnel as part of the applications for which it is intended, in accordance with the relevant standards and the manufacturer's instructions.</p>	
Harmonised Standards	EN 1005-1; EN 1005-2; EN13463-1; EN13463-5; EN 60079-15
Standards and Technical Specifications	EN ISO 12100-1; EN ISO 12100-2; EN 60079-0; EN 60529; IEC 61951-2; UL 248-8
Notification Body holding the Technical File	TRL Compliance Moss View, Nipe Lane, Up Holland, West Lancashire WN8 9PY
Authorised Representative	PowerQuick UK The Bull Pen Castle Square Bletchingley RH1 4DL
Date of Issue	



READ THIS ENTIRE MANUAL BEFORE OPERATING THE POWERQUICK ASCENDER.

1 Warranty

THERE ARE NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, or otherwise which extend beyond the description enclosed in this document and those expressly stated in these conditions.

PowerQuick, Inc. warrants to the Purchaser that the products being sold hereunder have the capacities and rating set forth in the product specifications and are free from defects in material and workmanship for a period of one year or 3.8 miles/6K (20,000 rotations measured by the odometer on the unit) of use, whichever comes first. The Ascender must then undergo inspection and certification by a PowerQuick, Inc. qualified maintenance facility as discussed in Section 5. Once recertified, the warranty is extended to the next certification period. See Maintenance Agreement on page 35.

The seller does not warrant equipment or accessories manufactured by others, but will submit to buyer upon request the manufacturer's warranty, if any, and will assist buyer in securing the benefit of such warranty if inspection proves such parts defective. In no event, whether as a result of breach of warranty or otherwise, shall the seller be liable for special or consequential damages. No warranty is included against any consequential damages arising from any defect. Considering the widely varying conditions under which our products are used we cannot be and are not bound, and no person is authorized to bind us, by any further warranty whatsoever, express or implied.

2 Personal Safety



- **Do not operate if under the age of 18. Do not operate unless YOU HAVE BEEN TRAINED by a certified trainer.** Dangerous in the hands of untrained users.
 - **For information on PowerQuick, Inc. approved trainers contact your distributor.**
 - **Stay alert, watch what you are doing and use common sense when operating the Power Quick Ascender. Do not use while tired or under the influence of drugs, alcohol, or medications.** A moment of inattention while operating may result in serious personal injury.
 - **Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewelry, or long hair can be caught in moving parts.
 - **Use only accessories that are recommended by the manufacturer for your model. Accessories that may be suitable for one model may become hazardous when used on another. See the approved Accessories List located at the back of this manual.**
 - **Carefully read the maintenance and certification instructions. Check for misalignment, loosening or binding of moving parts, breakage of parts, and any other condition that may effect the operation. If damaged, have the ascender serviced before using. Many accidents are caused by poorly maintained equipment.**
 - **Do not immerse this product in water, for example, a lake, swimming pool or water puddle. May result in serious personal injury.**
 - **Do not connect or disconnect battery cable from either the PQ 500 or the battery in a potentially hazardous environment.**
 - **Limit climb or descent to 200-foot intervals. Allow 15 to 30 seconds for unit to cool during long climbs or descents.**
 - **When using in a POTENTIALLY HAZARDOUS ATMOSPHERE make sure the battery is fully charged. Do not recharge the battery in a potentially hazardous atmosphere. Do not overload ascender. Operation with excessive loads and low battery voltage may cause clutches to overheat. It is the operator's responsibility to insure that the PQ 500 is not overloaded.**
 - **Keep ascender clean of debris. Inspect and clean rope prior to each use and periodically during use. This is particularly important when the ascender is used in dirty environments.**
-

3 Specifications

PQ 500AX Powered Ascender

- **Operational Features**
 - Compatible with standard climbing gear (Must be used in accordance with manufacturers instructions and meet applicable requirements and regulations)
 - Use with 1/2-in (12.7mm) static (low stretch) kernmantle rope (Tested and approved with PowerQuick, New England, Blue Water, and PMI brand ropes) (Note: Care and maintenance of rope required per manufacturer's instructions.) Test any other brand thoroughly before using with the ascender to make sure it grips well and does not slip. You may also send a sample of the proposed brand to PowerQuick for evaluation prior to use.

- Weight: 28 pounds (13 kg)
- Lifting capacity: 500 pounds/227 kg; gross load 550 lbs (250kg) includes PQ 500 and battery pack.
- Designed for use by one person, for work positioning and/or moving tools and materials
- Easily carries 2 people for rescue applications
- Lifting speed: 0.7 ft/second (.22m/sec)
- Powered descent speed: up to 1 ft (.3meter)/sec (varies with weight)
- Can be operated using remote or manual control
- **Safety Features**
 - Tested to a safety factor of 5 for structural and a factor of 2 operationally
 - Temperature sensor shuts unit down in event of motor overheating.
 - Interlock switch on cover ensures that unit will not operate if rope handler cover is not properly closed.
 - Rope cannot be removed from ascender when it is under a load.
 - Unit will not operate if the rope handler door is open.
 - Auto-braking in hands-off position provides for both locked-off and emergency or panic lockoff. No force need be applied for panic lockoff.
 - Emergency Stop Button: cuts power to unit
 - Load limiter: Prevents lifting of load in excess of 900 lbs (409 kg) to allow for a safety factor. However, the rated load permitted is 500 pounds.
 - Static Load/Stationary holding capacity: 1,100 lbs (500kg)
 - Dynamic load capacity: 2,500 lbs (1,136 kg)
 - Forward/reverse power control
 - Palm Interlock must be engaged to actuate ascender motion
 - Low voltage sensor detects low battery voltage and shuts unit down. PQ 500AX level is 28 VDC,
 - No pinch points
 - No sharp edges, points, etc., capable of puncturing or cutting the skin
 - Accessible surface temperature do not exceed 65° C
 - Rotating parts protection
 - No shock hazard
 - The motor will not re-start if the winding temperature exceeds 100° C
 - IP 54 enclosure for electronics, motor and battery.

- **Use restrictions**



- Not to be used after shock load of in excess of 1,200 lbs (544kg).
- Not to be used after drop greater than 4 ft (1.2meters) onto hard surface
(Must undergo inspection and recertification after these events)

- **Environmental conditions**

- Operating Temperature Range: 32° F to 113° F (0° C to +45° C).
- Moisture: May be used in wet weather. However; do not immerse this product in water, for example, a lake, swimming pool or water puddle. May result in serious personal injury.
- No negative affect from corrosive environments, e.g. salt water or spray. Should be cleaned after use in these environments

- Dust, sand, dirt, mud etc: .The ascender can be used in oily, or dirty conditions without affecting the performance. However; for rope safety, keep ascender clean of heavy debris. Inspect and clean rope prior to each use and periodically during use.
- **Power Supply**
 - NiMH Rechargeable Battery: 36vdc, 30 amp, 360 amp-minutes discharge to 25 VDC.
 - Climbing Height: 500 to 600 feet (152-182m) per charge.
 - Battery Pack Weight: 14 lbs.
 - Designed to withstand 4-ft (1.2meters) drop on hard surface.
 - Battery life: approximately 800 charge/discharge cycles (temperatures extremes can affect battery life)
 - Battery is protected with an internal fuse that will disable the battery in event of a short circuit. The normal battery uses a blade type 40 amp fuse. PQ 500AX batteries use a sand-filled, 25 amp fuse.
 - The battery cable is 9 feet long with a threaded connector on either end. The cable connectors are such that it is impossible to connect the cable backwards.
- **Charger**
 - Use to charge PowerQuick NiMH battery packs only
 - Input: 115/230VAC 60/50 Hz 1.8/1.0A
 - Output 32VDC @ 30A Continuous

4 Battery Pack and Charger



WARNING: Before using battery charger read all instructions and cautionary markings on (1) battery charger, and (2) battery pack.

The PowerQuick Ascender battery pack features Nickel-Metal Hydride (NiMH) rechargeable batteries. They offer up to 40% more capacity (per volume) than NiCad. They are also more environmentally friendly. The biggest advantage of NiMH over Nicad is their ability to accept a charge at any time without suffering from the "memory effect". The best way to charge NiMH batteries is with regular charging. Do not allow NiMH batteries to discharge below 25 VDC.

Sustained high-current overcharge and cell polarity reversal (during charge) are destructive to NiMH batteries. It is essential to terminate charge when the cell is full. If this is not done, the temperature and pressure within the cell will rise quickly as the charging current is dissipated as heat. NiMH cells have internal vents, which will open to allow gas to escape and prevent explosion of the cell.

Cell Type	NiMH (Sealed secondary)
Cell Numbers	30
Nominal Voltage	32V DC (30Amp)
Capacity	6 Amp Hour (360 Amp minutes to 25V)
Duty	182 – 244m climbing per charge

Cautions-



- The AX battery has a sand-filled Fuse. The fuse is not replaceable by the end user. Equipment shall be returned to the manufacturer or authorized repairer for fuse replacement.
- Use only the charger that accompanies your product or a direct replacement. Do not substitute any other charger. May result in battery damage and/or serious injury.
- Do not disassemble the battery or the charger or operate the charger if it has received a sharp blow, been dropped or otherwise damaged in any way. Replace damaged cords or plugs immediately. Incorrect reassembly or damage may result in electric shock or fire.
- Do not recharge battery in damp or wet environment. Do not expose charger to rain or snow. If battery case is cracked or otherwise damaged, do not recharge. Battery short or fire may result.
- External Appearance-The cell/battery shall be free from cracks, scars, breakage, rust, discoloration, leakage and deformation.
- Reverse charging is not acceptable. PowerQuick Battery Charger is equipped with a circuit to prevent reverse charging.
- Charge before use.
- Do not charge/discharge with more than the specified current.
- Do not short circuit the cell/battery.

- Do not incinerate or mutilate the cell/battery.
- The life expectancy may be reduced if the cell/battery is subjected to adverse conditions such as extreme temperature, deep cycling, and excessive overcharge/over-discharge.
- Store the cell/battery in a cool dry place.
- Keep away from children. If swallowed, contact a physician at once.
- Avoid using this product during an electrical storm. There may be remote risk of electric shock from lightning.
- Use with PowerQuick Ascender only. DO NOT use to power other devices

4.1 Use Instructions

Charging the Battery

- Charge the battery using the battery pack provided by PowerQuick, Inc. with your PowerQuick Ascender. (Figure 1)
- Insert the 3-pin plug on the battery charger into the matching receptacle on the top of the battery. (Figure 2)
- Plug the charger into the electrical outlet. The charger is compatible with 110 and 230VAC. Locate the switch on the end of the charger and, using a ball point pin, move it to the correct setting.
- An LED on the end of the charger indicated red for power on, yellow for charging and green for full charge. When the indicator turns green, disconnect the battery, and then remove the battery from the charger.

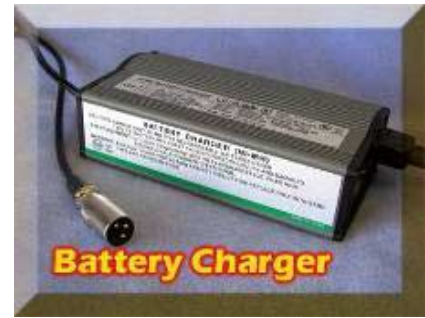


Figure 1



Figure 2

4.2 Battery Warranty

PowerQuick, Inc. Battery Packs are warranted against defects in workmanship, material and construction for a period of one (1) year from date of shipment. The warranty period is void if the purchaser does not adhere to storage instructions specifying both storage time and temperature (a charged battery may be stored up to 1 year at room temperature 68° F), are modified, subjected to abuse, physically damaged when allowed to discharge below 25 VDC, or charged with a charging device not approved by PowerQuick, Inc.

If the battery pack is found to be defective it will be replaced at no charge. If, however, it is defective due to misuse as outlined in this warranty the customer will be so advised and replacement will NOT be issued. The liability of PowerQuick, Inc. under the warranty is limited to a replacement of the defective battery pack subject to the conditions as outlined in this paragraph. The warranty is the exclusive remedy.

THERE ARE NO OTHER WARRANTIES EITHER EXPRESSED OR IMPLIED INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND SUCH WARRANTY IS LIMITED TO THE EXPRESS WARRANTY PERIOD. LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES UNDER ANY AND ALL WARRANTIES ARE EXCLUDED TO THE EXTENT EXCLUSION IS PERMITTED BY LAW. THE SOLE REMEDIES FOR BREACH OF ANY AND ALL GUARANTEES OR WARRANTIES AND THE SOLE REMEDIES FOR POWERQUICK, INC. LIABILITY OF ANY KIND WITH RESPECT TO THE PRODUCTS FURNISHED UNDER THIS AGREEMENT, OR PURSUANT TO THIS AGREEMENT, SHALL BE LIMITED TO THE REMEDIES PROVIDED IN THE PRECEDING APPLICABLE PARAGRAPHS HEREOF. IN NO EVENT SHALL POWERQUICK, INC'S. LIABILITY FOR DAMAGES WITH RESPECT TO ANY OF THE PRODUCTS FURNISHED EXCEED THE CHARGES PREVIOUSLY PAID BY CUSTOMER FOR SUCH PRODUCTS. CUSTOMER AGREES THAT POWERQUICK, INC. AND AUTHORIZED DISTRIBUTORS AND/OR DEALERS SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR LOSS OF USE, REVENUE OR PROFIT, EVEN IF POWERQUICK, INC. SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH POTENTIAL LOSS OR DAMAGE.

NI-MH BATTERY CHARGER SPECIFICATIONS	
MODEL	8208N3
Input Voltage	115VAC - 230VAC
Output Voltage	44VDC (30 cells x 1.2V)
Efficiency	Min. 81%
Output Current	2.6A ± 0.1A
Trickle Charge Current	500 - 600mA - adjustable
-ΔV	6mV ± 2mV/cell , 120mV - 240mV
ΔT/Δt	1.0°C ± 0.3°C /min
Maximum start charge temperature	45°C ± 5%
Minimum start charge temperature	0°C ± 5%
Tmax	48 ± 5% - adjustable
Max charge time	6hours - adjustable
Vmax	>52.5V
No load voltage	59.5V ± 0.5V
Under voltage trickle current	0.5A ± 0.1A(≤26V)
Operating Temperature	0°C - 40°C
Store Ambient Temperature	-10°C - 70°C
Measurement	140mm(L) ×90 mm(W) ×50 mm(H)
Weight	0.8kg
Approval	CE, TUV, UL, PSE, EMI, CB, CSA
Output Detection:	
1. Short Circuit Detection	
2. Output Voltage/ Current Limit	
3. Reverse Power Protected	
4. Overheat Detection	
5. Charging Time Limit	

4.3 Battery Disposal



In accordance with the Environmental Protection Agency Rechargeable Battery Management Act, 42 U.S.C 14301-14336 ("Battery Act") rechargeable batteries must be disposed of by recycling. To locate a recycling facility in your area go to <http://www.rbr.org/consumer/uslocate.html> or call the Rechargeable Battery Recycling Corporation, a nonprofit organization which manages the Charge up to Recycle! Program at 1-800-8-BATTERY. It is the Operator's responsibility to dispose of, or recycle, the battery in accordance with regulations of their country.

5 Certification/Maintenance Requirements

- This Ascender must undergo maintenance, inspection and certification following every 3.4 miles/6K (20,000 rotations as measured by the odometer located on the side of the Ascender) of use, whichever comes first. The certification requirements of each ascender are printed on the Maintenance Inspection Log located inside the back cover of this Manual.
- The ascender must also be recertified any time it is subjected to a drop from a distance of more than 5 feet. Or if it is subjected to an on-line drop of more than 1 foot.
- Maintain diligent maintenance inspection logs in the space provided on the inside back cover of this booklet. Your sales person has recorded the beginning odometer reading in the inspection log and indicated the reading when the next maintenance inspection is due. This reading will be tracked and updated each time your unit is serviced. Additionally, a permanent record of all service for your unit will be maintained in the PowerQuick, Inc. maintenance database.
- Service must be performed only by a PowerQuick, Inc. Certified Maintenance Facility. Service or maintenance performed by unqualified repair personnel could result in injury or death and will void all warranties written or implies. See the Maintenance Contract at the end of this manual.
- Failure to follow maintenance and certification requirements voids all warranties, written or implied.
- PowerQuick, Inc. our partners distributors, dealers and subsidiaries are not responsible for damage or injuries that result from failure to maintain the ascender in accordance with these instructions.
- Damage that occurs due to improper packing of the ascender being returned for maintenance is the responsibility of the person or company shipping the product. We suggest shipping in the original hard case. If shipping in your own packaging prudence suggests documenting the condition of your ascender photographically prior to shipping.



6 Certified Maintenance Facilities or Principle Points of Contact

<p>USA <u>PowerQuick, Inc. Certified Maintenance Facility</u> 3000-B Conestoga Drive, Carson City, NV 89706 (775)882-8100 http://www.powerquickinc.com/maintenance@powerquickinc.com</p>	<p>United Kingdom (Point of Contact) <u>PowerQuick UK</u> The Bull Pen Castle Square Bletchingley RH1 4LD United Kingdom +44 01883 740 091 e-mail: richard-brooke@btconnect.com</p>	<p>USA <u>APEX, Inc (Point of Contact)</u> 620 Alfery St. Greensberg, PA 15601 (724) 216-5302 thomasearly@apexinc.biz</p>
<p>Australia and Pacific Region of Southeast Asia <u>Vertical Innovations International Pty Ltd (Point of Contact)</u> 4, 4-6 Tengah Crescent, Mona Vale NSW, 2103 Australia, PO Box 135 Mono Vale NSW 1660 Office (02) 9979 2582 Mobile 0427 800 028 www.vertical.com.au e-mail: info@vertical.com.au</p>	<p>US and International <u>Production Resource Group (PRG) (Point of Contact)</u> 5050 Valley View Blvd. Las Vegas, NV 89118 Tel: (702) 942-4644 www.prg.com e-mail: timbrennan@PRG.com</p>	<p>India Certified Maintenance Facility <u>Bonanza Miura Products</u> H 9&10, Special Economic Zone, Noida 201305 (U.P.) India Tel: +91 (0120) 3078333/4/5 Fax: +91(0120) 3078336</p>

7 Definitions

Building maintenance means operations such as window cleaning, caulking, metal polishing, re-glazing, and general maintenance on building surfaces.

Control means a mechanism used to regulate or guide the operation of the equipment.

Davit means a device, used singly or in pairs, for suspending a powered platform from work, storage and rigging locations on the building being serviced. Unlike outriggers, a davit reacts its operating load into a single roof socket or carriage attachment.

Confined or enclosed space means any space having a limited means of egress, which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere. Confined or enclosed spaces include, but are not limited to, storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open top spaces more than 4 feet in depth such as pits, tubs, vaults, and vessels.

Lifeline means a component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Live load means the total static weight of workers, tools, parts, and supplies that the equipment is designed to support.

Minimal risk is defined as “the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical and psychological examinations or tests” in 32 CFR 219.102(i). The overall risk level is “Less Than Minimal Risk.” This is based in accordance with this definition and regulation on the results of component testing as discussed in Section 3, inherent safety redundancies in the design, as well the fact that the ascender will not be used in testing, demonstration or actual use without the use of a secondary fall arrest system.

Rated working load means the combined static weight of men, materials, and suspended or supported equipment.

Registered professional engineer means a person who has been duly and currently registered and licensed by an authority within the United States or its territories to practice the profession of engineering.

Prime mover means the source of mechanical power for a machine.

Rated load means the manufacturer's recommended maximum load.

Rated strength means the strength of rope, as designated by its manufacturer or vendor, based on standard testing procedures or acceptable engineering design practices.

Rated working load means the combined static weight of men, materials, and suspended or supported equipment.

Roof powered platform means a working platform where the hoist(s) used to raise or lower the platform is located on the roof.

Roof rigged davit means a davit used to raise the suspended working platform above the building face being serviced. This type of davit can also be used to raise a suspended working platform, which has been ground-rigged.

Rope means the equipment used to suspend a component of an equipment installation.

Secondary brake means a brake designed to arrest the descent of the suspended or supported equipment in the event of an overspeed condition.

Tie-in guides mean the portion of a building that provides continuous positive engagement between the building and a suspended or supported unit during its vertical travel on the face of the building.

8 Use Instructions

The PowerQuick Personal Ascender is easy to use and operate. The photos below show the major components of the PQ 500.

8.1 Loading Instructions

1. Make sure the unit is free of debris or dirt – particularly around the capstan (10), tension arm (3) and up-rope guide (13).
2. Open the capstan cover by turning the latch on the outside of the cover (Figure 6).



Figure 3



Figure 4

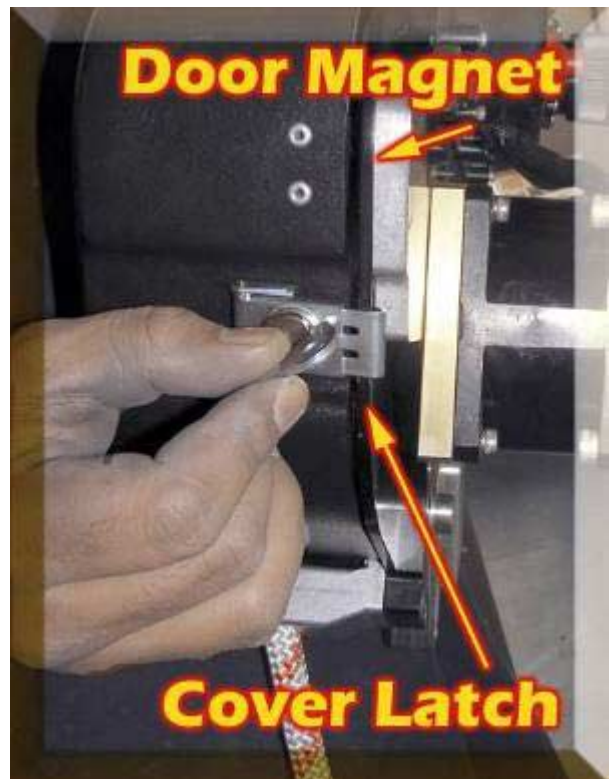


Figure 5

Follow the instructions as illustrated Below

1. Place your thumb on the up-rope guide latch. Push in and up to open the guide.
2. Place the rope in the up-rope guide. Close the latch and push down making sure it is firmly secure.
3. Make sure the first wrap of the rope is in the groove closest to the ascender body and between the capstan and the capstan and the tension arm
4. Wrap the rope around the inside V notch of the capstan and around the outside of the capstan idler.
5. Pull the rope into position for a second wrap.
6. Make a second wrap around the outside capstan V groove.
7. You may need to pull out on the bottom of the idler arm to make sure the rope is behind the rope retainer.
8. Guide the rope through the down-rope guide.
9. Tug on the rope to make sure it is seated in the capstan.
10. Close and latch the cover. **THE ASCENDER WILL NOT OPERATE UNLESS THE COVER IS CLOSED AND SECURELY LATCHED.** If the cover is not closed the Red power light will blink. Recheck the cover.



When the rope is properly loaded and the cover closed, turn the unit on. When the power up light is green, conduct a quick operational check on the PQ 500. With no load, place forward/reverse lever in UP direction and pull trigger. The PQ 500 should start to climb the rope. If it does not, pull snugly on the rope where it exits the ascender while pulling the trigger. This will seat the rope in the capstan. Place the forward/reverse lever in the DOWN direction and pull the trigger, PQ 500 will descend. You are now ready to climb.

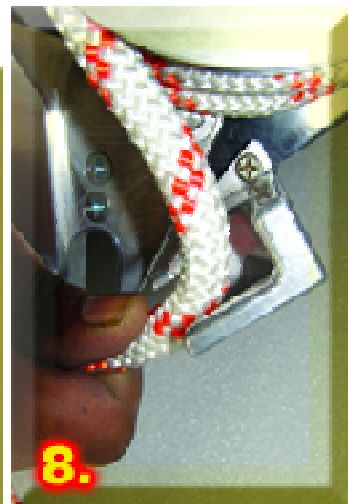
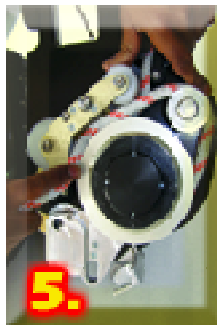
Any time the rope does not climb immediately upon pulling the trigger just pull on the down rope a little to add tension and the ascender will take off. If it fails to grab the rope at that point check your rope for wear and ensure you are using the correct rope.

Typing a weight of 5 to 10 pounds to the bottom of the climbing rope will provide adequate down-rope tension to prevent bunching of the rope while in use.

8.2



Loading The PowerQuick



Connecting the Power Supply



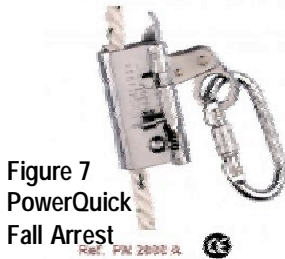
BATTERY CABLE CONNECTION CAN RESULT IN ARCING. DO NOT CONNECT OR DISCONNECT BATTERY IN A POTENTIALLY EXPLOSIVE ENVIRONMENT. US ONLY THE PQ500 AX IN HAZARDOUS ARMOSPHERES.

1. Make sure the battery is properly charged.
2. Attach the cord to the battery. Make sure the male and female pins are aligned by lining up the notches on the plug ends. Push firmly and screw in the connector until it is snug.
3. If using an AX battery, use an allen wrench, to tighten the set screw in the collar.
4. Repeat connections for the PQ 500 using the same process.
5. Using a carabineer, attach the battery to a D-ring on the side of your climbing harness or the load attachment point at the bottom of the ascender. **DO NOT LET THE BATTERY HANG FROM THE ASCENDER UNSUPPORTED.**
6. NOTE: For the conventional version, the battery can be connected at the work site. The process is the same as that listed above, except that there is no set screw on the battery cable.



Figure 6: Line up notches and screw firmly into place

8.3 Connecting to the Ascender



1. Make sure the climbing rope and fall arrest system is properly anchored. (See Section 12).
2. When using the rope grab place a small weight at the bottom of the belay rope. This allows the fall arrest to rise as you climb without kinking on the rope.
3. Using a carabineer, attach the ascender to the D-ring at the waist of the climbing harness and the attachment point at the bottom of the ascender. PowerQuick, Inc. recommends use of a full body harness.
4. Attach the fall arrest device to the D-ring on the back of your climbing harness.
5. Let your weight down on the ascender firmly.

8.4 About the Power Control

1. Press and release the “Power-On” button. This begins the initialization cycle for the electronics.
2. The red indicator above the “Power-On” button will light.
3. Rope cover ajar—red indicator blinks twice. Closing cover will restart power up.
4. In rare conditions associated with extremely long climbs the motor may potentially overheat. If this occurs the red indicator on the on button blinks once. The unit will automatically shut off. Wait 10 to 15 minutes for unit to cool. The unit will power up automatically.
5. In the event of a low battery voltage, the unit will shut down. It can be restarted by pressing the “Power On” button. If this happens, there will not be adequate charge in the battery to allow the ascender to climb, but it will be able to descend.



Figure 8: Power Controls

8.5 Emergency Power off/Reset

Located on the top of the ascender (Figure 9) the “Emergency Power Off” is used in the extremely rare event that an operator must stop the ascender for safety. As an example, if the remote control is over-riding the operator and the operator must stop the unit. The “Emergency Power Off” will cause the unit to shut down. In order to restore power, the “Off/Reset” switch must be activated. The unit should now go through a normal power up mode.



Figure 9: Emergency Power Off.

8.6 Climbing with the ascender

The PowerQuick 500 series ascenders feature a trigger release, a two-position trigger and an up/down lever.

1. Move the up/down lever to the correct position by pulling the release pin and moving the lever. (Figure 10)
2. Place your hand inside the handle with you palm against the trigger release. The default position with the trigger release open is the brake. Any time the trigger is released the brake is engaged.



Figure 10: Up/Down Lever

3. Press firmly on the trigger release with the palm of your hand.
4. Squeeze firmly on the trigger. You will go up or down depending on the position of the up/down lever.
5. To stop simply release the trigger and the ascender will hold on the rope for working.
6. If the battery begins to loose power during ascent, simply switch to descend. The unit uses so little power on descent that it is virtually impossible to be “stranded on the rope from loss of battery charge.



Figure 11: Trigger

The unit can be stopped at any location on the rope and the direction changed.

8.7 Remote Control

Some versions of the PowerQuick ascender may be equipped with an optional Remote Control.

The remote control is not design or approved for use in Hazardous Environments.

The RF transmitter operates in the 902-928 mhz band (European model uses 869.85 mhz) nominally known as Industrial, Medical, Scientific (ISM) band. Features pulse codign with 16 separate codes. The hand held transmitter is always operational.

1. Prior to use connect the antenna to the Ascender.
2. The Remote Control transmitter is keyed to a specific ascender. They are numbered as pairs. Make sure the number printed on the Remote Control matches the Serial number on the ascender. Only the appropriate ascender can be used with the Remote.
3. The transmitter has two Switches—UP and DOWN. Depressing the UP button commands the ascender to go up. Likewise the DOWN button causes the unit to descend.
4. The remote will override local, manual commands. That is, when the Remote Control is commanded, the Local Control is disabled.



Figure12: Attaching the antenna

5. The effective range of the Remote is approximately 250 feet; however, the range may be reduced for some conditions such as metal shielding. In clear conditions the range may approach 400 feet. (Note: range performance may be increased if the antenna on the Remote Control is parallel to the antenna on Power Quick)
6. The Remote Control is powered by a 9 vdc battery. To change the battery, remove the back panel from the Remote Control module.
7. **WHEN USING THE REMOTE TO CONTROL THE ASCENDER, ALWAYS MAINTAIN VISIBLE CONTACT WITH THE POWER QUICK.**
8. Turn off cell phones as interference may occur with some brands of phones.
9. When using in some steel buildings feedback may result in erratic operation. We can provide a ¼-wave antenna for use in these locations. Contact your dealer.



Figure 13: Remote Control

8.8 Brake function

1. Automatic brake—the brake engages automatically as soon as the control is disengaged. That is, the control is only to tell the motor to go forward or reverse. No command results in stop.
2. The brake on the PQ-500 is automatically applied when the motor is not driving. That is, if the motor is commanded to “up” it first releases the brake, then powers the unit up. When the motor is not powered the brake automatically applies.
3. The brake is a multi-plate device with three rotors and four stators. The rotors are stainless steel while the stators are oil-lite bronze.
4. A pressure plate is spring-loaded and presses on the stack of rotors and stators.
5. A throw out device is actuated by torque from the motor.

8.9 Manual Brake Release

The PowerQuick 500 incorporates a Manual Brake release, which can be used for finite positioning or for emergency release in the case of loss of power.



1. Depress the brake release lever by pinching the lever with the thumb. Press the lever inward towards the body of the ascender. **CAUTION THE HOUSING MAY BECOME HOT DURING USE.**
2. Do not allow the load to build up considerable speed. It is best to start and stop the load often -- for example, every foot or so of drop.
3. To begin descent, press the lever on the end of the ascender as shown in the photo at right. Use only brief depressions. When your thumb is removed from the lever the PowerQuick automatically stops on the rope



Figure14: Manual Brake Release



4. Use caution when becoming accustomed to this feature as the rate of descent is more rapid than a normal powered descent.
5. The brake will heat up during a long descent. It should be allowed to cool periodically, particularly if the load is near the maximum rated load. We recommend a 1- to 2-second rest every 10 feet (3m) and a 15- to 30-second rest every 200 feet (61m) regardless of load. Maximum periods of descent using the manual brake shall not exceed 200 feet (61 m) without stopping the unit for at least 2 minutes.
6. With the exception of an emergency egress where life or physical safety is at risk, do not descend at a rate faster than 1.3 ft/sec. (.4m/sec)

8.10 Attaching the Load and Checking Lift Capacity

The unique PowerQuick load limiter feature prevents accidental overloading of the unit, increasing user safety. It will disengage the rope handler if the load is excessive. As shown in figure 3, it is integral to the load attachment point. The load limiter function is to clamp the rope to the capstan, until the limit load is reached. While the PQ 500 is rated for use with 500 lbs, (226 kg) the limit load is set at about 900 pounds (408 kg) as a safety factor. The load limiter will release the tension on the rope in dynamic loading conditions. For example if there is slack in the rope above the load that releases when the load is lifted, the load limiter will keep the shock loads to less than 2,500 pounds (1134 kg) in the event the load is subject to a .6 meter drop.

1. Whether using the ascender with people or equipment, the load is always attached to the load limiter loop. **Note: Do not attach the load to any other part of the ascender, or if inverted, the structure.**
2. For proper function of the ascender, **DO NOT USE AT MORE THAN THE RATED LOAD.** Estimate the load prior to attaching to the ascender. The load test in section 10.8.1 should be conducted; however, it does not relieve the operator of responsibility of ensuring proper loading of this equipment. (Note: While the PQ-500 is rated for 500 pounds (226 kg), in order to insure proper performance with the rated load, the unit will actually lift more than that weight. Therefore, it is imperative that you keep the load within the recommended range.)
3. The ascender has overload protection. Check the load before lifting greater than 3 feet above floor level using the load test described in the next section.
 - i. Clutch—A centrifugal friction clutch limits the torque from the motor. (Normal clutch operation is based on a proper loading of the ascender and charge of the battery.) If the load is excessive and the battery voltage is low, the clutches may slip. If this slippage continues for 2-3 seconds, they will overheat.
 - ii. When the temperature is at freezing we recommend the ascender be run up and down the rope a short distance five or six times to warm the parts before using with a load.



Figure 15: attaching to the load limiter

8.10.1 Load test—(Note: this test is performed with a fully-charged battery. A low charge on the battery will result in stalling of the ascender clutch.)

1. The loaded ascender should be lifted approximately 2 feet off the floor or ground level as appropriate. If the ascender does not lift the load cleanly, it is either too heavy or the battery charge is low.
2. Bounce the load on the line. For example, release the manual brake and let the load descend for about 1 foot, then engage the brake. This action should induce a slight oscillation or bouncing of the loaded ascender. (Note: This bouncing on the rope will introduce dynamic loads that will cause the load limiter to trip if the load is greater than 700 pounds.) If the brake fails to stop the load, the ascender may be faulty and should be returned to the manufacturer's qualified service center.
3. Command the ascender to climb. If there is a hesitation or inability to climb, the load is too heavy and should be reduced by about 200 pounds.
4. The ascender is now ready to transport the load to the desired position.
5. Tying a weight of 5 to 10 pounds to the bottom of the climbing rope will provide adequate down-rope tension to prevent bunching of the rope while in use.



8.11 Thermal Protection

1. The PQ 500 has a thermally protected motor. A thermal switch rated at 85°C (70°C for the AX version) is located near the motor.
2. Operation—The PQ 500 will lift the rated load 200 feet or about 60 meters of continuous climb without extensive heating if the initial temperature is 70°F or 20°C. Colder ambient temperatures will result in longer climbs, while higher ambient temperatures reduce the climb distance. It is recommended that for long climbs, the operator rest the PQ 500 for about 10 minutes every 200 feet to allow the unit to remain cool.



CAUTION: This is a high-power unit. External surfaces near the motor and gearing tends to get hot during extended operation. The temperature will not burn the skin; however can become uncomfortable to the touch. In close quarters or indoors you may consider using the optional heat guard.

3. If the sensor detects an over temperature condition, it will open and stop the operation of the ascender. The unit will shut down. Normal operation will return when the unit cools (about 5 minutes). This will be signified by a solid green light.
4. Maximum periods of powered ascent or descent shall not exceed 61m (200 feet) without stopping the unit for at least 10 minutes.

8.12 Horizontal applications

The PowerQuick can be used effectively for horizontal as well as vertical access related to work positioning and egress.

Rigging requires the use of three ropes, one of which carries the primary weight, a second, which is attached to the ascender, and a third which is used for the fall arrest.

The three ropes must be rigged using approved techniques (see section 12) From one side to the other as shown in figures 16-18.

1. The weight-rope (shown in blue in figure 19) must be pulled tight from point A to point B. A pulley is attached to that rope.
2. The fall arrest rope should be attached in the same process and pulled tightly.
3. The work rope which is the rope used for the ascender, (shown as orange in figure 19) should be attached snugly to the uppermost height and allowed to hang loose or be attached loosely to the other side.
4. PowerQuick is loaded on the work rope in the normal manner with the up rope guide pointed in the direction of the climb.
5. Using a caribeener, attach the loop on the pulley to the loop on the PowerQuick.
6. Using a separate caribeener, attach the PowerQuick to the loop on your climbing harness.



Figure 19: Attaching the PowerQuick for horizontal operations.



Figures 16, 17, 18: Fire Department personnel practice horizontal rigging. In this case the lines were anchored to the top of the training tower and back of the emergency response vehicle.

7. Attach the fall arrest to the third rope.
8. Pull the trigger on the ascender to move along the length of the rope.

More detailed instructions are available from your trainer on our website at www.powerquick.com.

8.13 Extended work at heights and extremely long climbs



Figure 21: Multiple Battery attachment.

When working in situations where considerable time is spent at height, or when it is important that nothing impede forward reach, the ascender can be rigged using an overhead configurations. This entails using a spreader bar and a bosons' chair rigged as shown in figure 20.

For extremely long climbs or when it is inconvenient to change batteries during the work cycle, the ascender can be used with a special battery connector shown in figure 21. Up to three batteries can attached at one time and attached to the spreader bar.

This configuration can only be used with a remote version of the PQ 500 Series. A lanyard is attached to the manual release lever and threaded through the spreader bar for easy access to the climber.

The remote version can also be used to position loads as shown in figure 22 or in tandem applications for moving larger items. Tandem use is not allowed in some countries for the lifting of personnel. Check with the regulatory agencies in your country.

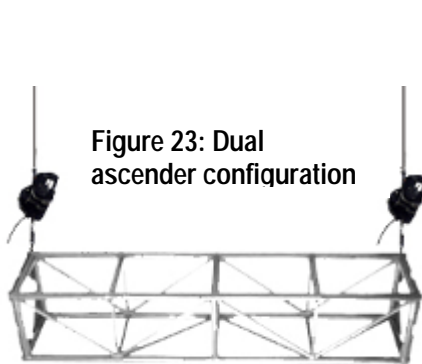


Figure 23: Dual ascender configuration



Figure 22: Material lifting configuration



Figure 20: Manual Brake Release

9 PowerQuick Powered Ascender System Maintenance

9.1 General Maintenance



1. All parts of the PowerQuick Powered Personal Ascender and other equipment affecting safe operation shall be maintained in proper working order so that they may perform the functions for which they were intended. Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may effect the operation. If damaged, have the ascender serviced before using. The equipment shall be taken out of service when any part is not in proper working order.
2. Employer shall demonstrate that all equipment is used, inspected and maintained in accordance with manufacturer's instructions. Provisions shall be made for the retirement of equipment as necessary.
3. Employer shall establish and monitor a procedure to ensure all items of equipment are inspected before each use.
4. Employer shall ensure that equipment is protected from damage during the course of its use.
5. If a defect is found during inspection the ascender should be "Red Tagged" to prevent its use until it has been serviced by an Authorized Service Facility.
6. There are no user-serviceable parts in this ascender. The unit should be sent to PowerQuick, Inc. or an Authorized Service Facility for maintenance and repairs. Unless otherwise instructed in writing by an authorized maintenance facility, opening sealed parts of the PowerQuick voids all warranties.

9.2 Cleaning

1. Controls and contacts shall be kept clean.
2. Maintenance specifically consists of cleaning all exterior parts with a rag. Water or cleansers may be used to remove dirt and grease, however do not immerse the PowerQuick unit in liquid.
3. The capstan and all other parts shall be kept clean if their proper functioning would be affected by the presence of dirt or other contaminants.



Inoperative Safety Devices. No person shall render a required safety device or electrical protective device inoperative.

Safe Deployment of the PowerQuick Ascender



Safety elements and climbing information are provided as general guidelines for informational purposes ONLY and DO NOT supersede Federal, State, or other requirements or the guidelines of Professional Associations which may have jurisdiction for your specific industry or in your particular region. Compliance with all federal, state or local laws or regulations is the responsibility of the user. See Section 18.

10 Operation Requirements

The PowerQuick is not a fall arrest device and is required to always be used with a secondary fall arrest system consisting of a safety line and lanyard connected to the operator's approved harness for fall arrest protection.

10.1 Required Items

The PowerQuick Powered Ascender access method relies upon the use of the following:

1. An access rope, which allows the operator to safely access the required area.
2. A mandatory safety or backup rope/system, which acts as a fall protection system in the event of failure of the primary access system. This rope and associated hardware must be used in such a way as to minimize fall distance to less than 1 foot and to ensure a maximum load to the user or anchorage of 12kN in the event of a fall.
3. Two points of connection must be maintained at all times. There must always be a physical connection to the backup or safety rope, and may also be a connection to the work rope, the structure etc. Rope access is used as either permanent systems, such as permanent façade access systems or temporarily in "one off" locations such as carrying out an inspection on a bridge or tower.



10.2 Required Practices

This section addresses some of the most critical requirements for use of the PowerQuick Powered Ascender for safe industrial roped-access. Industrial rope-access is a specialized form of work positioning used to gain access to a workplace by ascending or descending twin ropes fixed to secured anchorages. The PowerQuick Powered Ascender is used in conjunction with approved climbing equipment to provide for safe controlled ascent and descent of a person, and tools or equipment.

1. The selection, rigging and checking of all rope access components and assemblies shall comply with OSHA, State or another applicable International Safety Standards.
2. The employer shall prepare an access permit before beginning rope access work. The access permit shall include, but not be limited to the following safety objectives:
 - List the rope access methods to be used for the proposed work.
 - List the members of the work team by name and identify their duties. (Note: the Rope Access Supervisor shall assess the individual team member's suitability for the work to be performed.)
 - List the rope access equipment to be used for the work to be performed.
 - List the hazards associated with the work to be performed.
 - List appropriate personal protective equipment (PPE) to be used.
 - List provisions for providing security to the anchor.
 - List public safety provisions.
 - List the rescue service and the means to summon the rescue service.
3. Persons carrying out this work need to be physically fit and, to ensure safety. They must have a high standard of training and experienced supervision. Personnel setting up and using such equipment shall be able to demonstrate

their level of expertise and experience. Personnel with training, but without significant experience, should have experienced close supervision.

An operational emergency system and plan, including any necessary (and compatible) rescue recovery equipment, shall be immediately available on site and the required persons shall be trained in its use. A minimum of two trained industrial roped-access operatives shall be present on site at all times while the PowerQuick system is being used. The second person needs to be present in order to trigger or provide backup and emergency assistance as detailed in the emergency plan. To be effective, the workers must be in reasonably constant visual contact with one another.

4. Work shall not start where high winds and environmental factors could result in a serious hazard.
5. All tools and other items shall be attached to the employee or the PowerQuick Powered Ascender, unless another effective method is used to prevent a falling hazard. Any item over 25 pounds or of a shape that is difficult to handle shall be lowered and supported on a separate line. Care must be taken to ensure that no item can become dislodged or fall and create a hazard for those below.
6. Safety, Secondary, Belay or Backup line(s) or other appropriate fall arrest devices shall be used in addition to the main line unless the employer can demonstrate that the second line or other fall arrest devices would create a greater hazard or otherwise would not be feasible.
7. Where a safety line is used in conjunction with the main line, each line should have its own separate anchor and should be separately fixed to the worker's harness. This does not preclude both lines being attached to a single harness attachment point.
8. All suspension equipment must be individually identified and should be checked on a daily basis by a competent person. Careful inspection and service records must be kept for the PowerQuick Powered Ascender.
9. Before adopting rope access techniques for a particular job, the property owners, the main contractors and others responsible for commissioning the work shall do a risk assessment, which would include consideration of the various rope access alternatives available and their respective access advantages and hazards. In particular, attention shall be given to the following aspects:
 - Ability of the suspended person to safely use materials, equipment or tools necessary for the work and whether the reaction from any tool may place the person at risk.
 - Whether the work may loosen material, which could become a hazard to the worker or others.
 - Whether the time required for the work at any one location will be such that there may be unacceptable levels of risk.
 - Whether it would be possible to quickly rescue workers that are using rope access techniques from any position they could be expected to enter.
10. The employer shall designate a Rope Access Program Coordinator to be the main contact point for matters relating to the safety, training and regulatory aspects of rope access. The designated person should be suitably knowledgeable, experienced and qualified in rope access techniques.
11. Provision for prompt rescue or self-rescue and for emergency services shall be the responsibility of the Host Employer.

11 Equipment and Application of PowerQuick Systems

This section details important aspects of:

- Design requirements for equipment and installation of PowerQuick industrial rope access systems.
- Points to note relative to safe use of the PowerQuick Powered Ascender for industrial rope access.

Applicable State and OSHA industry-specific requirements should be read in conjunction with this section.

11.1 Fall Protection Basics and Job Site Safety

The improper use of safety equipment can create hazards that may result in serious injury or death. Follow all instructions closely and observe warnings.

Systems using components supplied by more than one manufacturer may not be interchangeable and could also create unforeseen hazards.

Employers & users of safety equipment are required by law to provide a comprehensive training program that complies with CFR 29-1926: 503.

Each employer or user must first read, understand, and receive training from the manufacturer's "Specification/Instruction" Manual for each type of component, before ever using the equipment for fall protection.

Training must be carried out by a "Qualified or Competent" person and the training must be documented in writing.

The employer should hold regular safety meetings and provide ongoing instruction for all employees using safety equipment.

OSHA standards should be regarded as a minimum requirement.

This manual should be carefully studied by all persons that will be using this equipment or giving training and instruction.

It is advised that employers have a written "Fall Protection Plan" that can be modified for "Job Specific" circumstances which addresses the hazards of each project.

Standards may vary depending on individual state Fall Protection regulations.

11.2 Equipment

The typical equipment used by all climbers has the overwhelming advantages of being light, portable, versatile and tough. For climbing with the PowerQuick Powered Ascender the basic inventory of equipment for each climber consists of:

- Two kernmantle ropes, one static (no stretch or "give") and one dynamic (stretches about 10%).
- A full body lightweight climbing harness
- An approved fall arrest system
- A large assortment of locking carabineers
- An approved climbing helmet
- A large assortment of nylon webbing and anchor straps. This webbing is used extensively for anchors, positioning and fall protection, and is the feature that strongly contributes to the effectiveness of the techniques as it is strong, light and provides good versatility for attaching to various anchorage elements.

This equipment is assigned to a climber to use and maintain, and is easily carried in a standard backpack. While each individual is responsible for gear maintenance, master logs are kept of critical items to track usage and wear.

12 Use Requirements

12.1 Structure and Anchorage Points - Existing Structure

Where the suspension ropes or safety ropes are attached to an existing structure which is part of the building, structure or a temporarily erected structure, the anchorage points and the building structure must be capable of withstanding an ultimate load equal to that required for the climber and equipment.

1. Fed. Std. RR-S-001301 Climbing Equipment requires that the equipment shall be strong enough to support a minimum static load of 1000 pounds and a safety factor of 3 for dynamic loading. It should be strong enough to absorb an impact load of a solid object weighing at least 500 pounds in a free fall to 12 inches.
2. Any equipment chosen to support a person at height should be such that it cannot be accidentally removed, dislodged or become unfastened from the rope while a person is suspended from it.
3. The building or structure and anchorage points should be assessed by a registered structural engineer, unless it is clear to a competent person that the anchorage system is structurally adequate. In either case, the person making the assessment shall document this. An example of where an engineer may not be required is where an anchorage sling of the correct capacity is secured around a solid, permanent structure such as a plant room, major structural members, suitable bracing members in bridges/towers etc. However, if any doubt as to the structural adequacy of the anchorage exists, an engineer should be involved. The engineer shall certify in writing that the proposed structure and anchorage points could safely contain all combinations of loads in a worst-case situation.
4. All relevant documentation shall be provided to the building manager or representative and the user of the system. The location of anchorage points, method of attachment, and the system of anchorage slings, which connect the work rope and the safety rope to their respective anchors, should be clearly shown in the documentation. This documentation may also include such documents as Work Method Statements, risk assessments, site checklists, insurance details, contact numbers for emergency services etc.
5. A copy of the documentation shall be kept on site while the system is being used.
6. Prior to first use and annually, a competent person shall inspect and certify in writing that the structure and anchorage points correspond with the drawings provided and that the effects of corrosion or any other factors have not rendered the structure or anchorage points unsafe for use with the industrial rope access equipment.
7. Where anchors are to be exposed to weather and/or are used for extended periods, the manufacturer should state that the anchors are suitable for such applications. Holes should be suitably sealed to prevent ingress of moisture.
8. Friction or chemical anchors should not be used without being inspected and proof loaded.
9. Permanent anchorages specifically installed for industrial rope access (or fall arrest) work shall be clearly labeled as such and marked with their ultimate (failure) load. Annual inspection and proof loading will be required.

10. Needles, brackets and parapet hooks shall comply with the same standards as for scaffolding, and must not be subject to any shock loads.
11. The attachment to the anchorage should at least equal the strength of the system attached to it. Re-direction of ropes from an anchor should not exceed 120 degrees unless the side loads produced at the redirection point are considered. Similarly, where the included angle at the attachment is high and produces a 'multiplier' effect, the extra forces produced should be considered.

12.2 Structure and Anchorage Points - Purpose Built Suspension Rigs

Where the suspension ropes or safety ropes are attached to a purpose built suspension rig specifically designed for industrial rope access systems, the following applies:

3. The purpose built suspension rig should be clearly and permanently marked with its brand name, model number, and serial number so as to ensure traceability. The purpose built suspension rig should also be clearly and permanently marked with its capacity and intended use (for example "Capacity - one person plus 50 lbs of equipment using industrial rope access method"). Any movable or removable counterweights should be clearly marked with their mass in kilograms.
4. Erection and operating instructions should accompany every purpose built suspension rig and should be easily understood. Where any additional equipment is specified, there should be clear instructions for the use of such equipment on the purpose built suspension rig. Where counterweights are of the removable type, instructions should clearly state the total weight of the counterweights required, and where such counterweights are to be positioned for a given application.
5. An registered structural engineer should verify the purpose built suspension rig design. The design should take into account the most adverse combination of loads but should in any case be designed for not less than 12 kN ultimate strength.
6. Prior to use it should be ensured that the building or structure supporting the purpose built suspension rig is adequate for the most adverse combination of loads transmitted from the industrial rope access system.

13 Field Operations Requirements

The following points should be noted regarding the use of The PowerQuick Powered Ascender for industrial rope access.

1. Suspension Point Height

Effective lateral restraints should be used to provide stability where appropriate, particularly on tall buildings. (A "rule of thumb" for consideration of restraints is 165 ft.; however they may be required well before this height on some buildings).

2. Windy conditions

The PowerQuick Powered Ascender should not be used in high winds - this is a factor to be considered, particularly on taller structures, when carrying out the Hazard Id and Risk Assessment. On many sites, a change in location from one face to another may allow works to proceed, even in periods of high or gusty winds.

3. Rescue

The PowerQuick Powered Ascender system should not be used in any location where it is not possible to provide prompt assistance or rescue if required. Prior to setting up of the system a rescue plan should be developed. Such a plan should consider the following factors:

- Guidance from rescue agencies.
- Type and availability of rescue equipment.
- Foreseeable types of injuries and ailments.
- First aid experience of personnel on site.
- Emergency services and associated plant (e.g. travel towers) available.
- Possible need for a dedicated pre-set up rescue system to be in place.

13.1 Surface Area and Weight

The PowerQuick Powered Ascender should not be used for work that requires the operator to handle objects and materials of excessive size or weight or that may be difficult to handle due to wind loading. Where the largest side of an object has an area greater than 144 inches square and/or the object is heavier than 20 pounds, methods to eliminate unacceptable risk should form part of the hazard identification and risk assessment and such methods should be utilized.

Notwithstanding the above, all objects and materials should be secured by lanyard to the PowerQuick Ascender, the operator, or swing seat, or to a separate rope to effectively prevent them from falling.

13.2 Electrical Hazards & Lockout/Tagout

The PowerQuick Powered Ascender should not be used where the user can receive electric shock from exposed live electrical conductors. In the absence of specialized measures developed specifically for the purpose, the system is not considered suitable for carrying out work on live electrical equipment due to the difficulty in providing immediate first aid and rescue in the event of electric shock. Lockout/tagout procedures will be required whenever maintenance or servicing is initiated on the Ascender to ensure that the machine/equipment is stopped, isolated from all potentially hazardous energy sources, and locked out before any service or maintenance where the unexpected energization or start-up could cause injury.

13.3 Corrosive Environments

The PowerQuick Powered Ascender should not be used in any environment, or with any substance that will cause the equipment to suffer undue or excessive corrosion, or damage the integrity of the equipment.

13.4 Ropes and Rigging

The PowerQuick Powered Ascender system is based on a twin rope concept with independent primary (working) ropes and secondary (safety, backup) ropes.

1. Each rope (working and safety) shall be attached to two independent anchorages, via two independent sets of attachment hardware. If an anchorage is unquestionably adequate, or engineer designed and tested for such purpose, both sets of attachment hardware might be connected to the one anchorage.
2. The safety rope shall be attached to separate anchorages to the main rope, unless the anchorages are unquestionably adequate or engineer designed and tested for such purpose. Separate attachment hardware shall be used for both ropes.
3. Static or Low Stretch kernmantle Ropes shall normally be used for ascending and descending with the PowerQuick Powered Ascender. Static or Low Stretch Ropes shall be of a kernmantle construction compliant with Cordage Institute 1801 Low Stretch and Static Kernmantle Life Safety Rope, and have a minimum breaking strength sufficient to supply the users' desired calculated system safety factor. In no case shall the safety factor for a rope access system be less than 5:1. An example of calculating system safety factors is as follows: a 68 kg (150-pound) worker, to achieve a 5:1 safety factor, must work on a system where the weakest link of the system is calculated to be capable of sustaining at least 340 kg (750 pounds).
4. Ropes made from nylon or polyester will normally be the most suitable for rope access work. Ropes of other man-made materials might, however, be required for specific situations. In such cases, great caution should be exercised in verifying their suitability for the work. Ropes made from high modulus polyethylene, high tenacity polypropylene and "Kevlar" are types of ropes, which may be considered in exceptional circumstances such as where there is severe chemical pollution or where the self-weight of the ropes could be a problem. However, H.M. polyethylene and H.T. polypropylene have much lower melting temperatures than nylon or polyester and may be affected by frictional heat from capstan. Dangerous softening of polypropylene occurs at temperatures as low as 27 degrees C (80 degrees F). Kevlar has a very high melting point but poor resistance to abrasion, UV light (including sunlight) and repeated bending. PowerQuick, Inc. will not warrant use of the PowerQuick Powered Ascender with these ropes.
5. All ropes and equipment should be individually identified and checked on a daily basis by a competent person.
6. All ropes shall be protected from fraying or wear. When they come into contact with sharp edges or rough surfaces, sleeves, radius protection or other means of protection should be used.
7. Ropes shall not show any significant signs of abrasion or other damage.
8. The kern must never show through the outside mantel or sheath.
9. Slings and seat boards shall meet appropriate standards and shall have minimum ultimate breaking strengths of 22kN. Note: Inadequate rigging can create unacceptable and dangerous loadings in PowerQuick Powered Ascender equipment. Correct training and experience is essential.

13.5 Harnesses and Lanyards

The harnesses used with the PowerQuick Powered Ascender shall be a one-piece full-body harness or a sit harness used in conjunction with a chest harness that is firmly attached to the sit harness.

All body harnesses and lanyards manufactured on or before January 1, 1998, shall be designed and built to conform to ANSI A10.14 requirements, Requirements for Safety Belts, Harnesses, Lanyards, Lifelines and Drop Lines for Construction and Industrial Use, which is hereby incorporated by reference.

13.6 Fall Protection

The PowerQuick Powered Ascender must always be used with approved fall arrest equipment.

1. All personal fall arrest, personal fall restraint and positioning device systems manufactured after January 1, 1998, shall be designed and built to conform to either ANSI A10.14-1991 American National Standard for Construction and Demolition Use, or ANSI Z359.1-1992 American National Standard Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components, which are hereby incorporated by reference.

13.7 Public Protection

When the PowerQuick Powered Ascender system is for technical rope access over an area open to traffic, either vehicle or pedestrian, at least one of the following should be provided:

1. Barricades around the area to prevent access. The barricades should have warning signs indicating that a person is working overhead and should generally be continuous and adequate, having regard to the location and pedestrian and vehicle traffic needs.
2. For short duration work in low traffic areas only where the above are not practicable, an observer or sentry may be situated at street level to control public movement, with appropriate signs provided.

13.8 Tools

All tools and equipment must be suitable for the work intended and compatible with PowerQuick Powered Ascender rope access work. In particular, they should not present a danger to the safe operation or integrity of the rope access system.

Where the workers carry tools and equipment, appropriate steps shall be taken to prevent them being dropped or falling onto people below.

All electrical equipment, plugs, sockets, couplers, leads, etc. should be suitable for the environment in which they will be used.

Power tools weighing more than 10 pounds should be fitted with a separate suspension system secured to an independent anchorage. Anchorages and suspension ropes used for equipment should be clearly identified to avoid confusion with those used to support persons.

Moving parts of tools should be kept clear of the operator, power leads and the suspension equipment.

Appropriate grounding shall be provided for as necessary.

Any power tools that could cause injury to the users or access equipment should be fitted with an automatic shut off switch that will cut off the power in the event of a mistake, accident, or emergency.

13.9 Access Zone

An Access Zone shall be established.

1. Anchorages should normally be established outside the Access Zone so that the workers can don their harnesses and helmets and attach themselves to the working line(s) before entering into the Access zone.
2. No one may enter the Access Zone for any purpose unless they are wearing a harness and are attached to an anchored safety rope.

13.10 Hazard Zone

Hazard Zone shall be established and marked, blockaded or identified to warn rope access personnel and passers-by of hazards associated with the work being performed. No one may enter the Hazard Zone unless they are wearing appropriate Personal Protective Equipment.

13.11 Communications System

An effective communications system shall be established prior to beginning work and should remain effective for all the time that work is actively taking place.

1. Radio systems or hard-line communications equipment should be used for communication purposes unless the area of work is such that all those involved are always visible to each other and within audible range.

14 Employee Selection and Capabilities

1. Employers should verify prior rope access training and/or experience.

2. Employer shall determine that personnel are sufficiently physically capable and free from any impairment that may prevent them from working safely.
3. Employees should have a medical examination before employment in rope access work and at regular intervals.
4. The employer shall use a trained Rope Access Technician for system setup, system safety check.
5. The employer shall use trained Rope Access Workers and/or Technicians to conduct all work on line.
6. The employer shall adhere to the overall safety requirements as outlined in the this proposal.

14.1 Duties of Level 1 Rope Access Workers

1. Equipment inspection and care
2. Inspect and insure anchor points are safe
3. Use equipment properly
4. Recognize hazard and access zones
5. Communicate any warnings
6. Perform self-rescue
7. Utilize appropriate Personal Protective Equipment (PPE)

14.2 Duties of Level 2 Rope Access Technician

1. Inspect equipment.
2. Inspect and insure anchor points are safe and construct safe anchor systems.
3. Use equipment properly.
4. Construct, inspect and analyze safe rope systems
5. Recognize and mitigate any hazards created by the work being done.
6. Identify and mark Access and Hazard Zone(s).
7. Communicate any warnings.
8. Perform self-rescue.
9. Utilize appropriate Personal Protective Equipment (PPE).
10. Supervise Rope Access Worker or Workers were appropriate

14.3 Duties of Rope Access Attendant (May be Level 1, 2, or 3)

1. Monitor the Rope Access Technician / Worker
2. Communicate with the Rope Access Technician / Worker
3. Monitor Access and Hazard zones as appropriate
4. Initiate, perform or assist in retrieval if applicable
5. Alert the rescue service as soon as the Rope Access Attendant recognizes there may be a problem endangering the Rope Access Technician / Worker
6. Utilize appropriate Personal Protective Equipment (PPE).
7. Perform other duties as assigned as long as they do not interfere with the above duties of the Rope Access Attendant.

14.4 Duties of Level 3 Rope Access Supervisor

1. Designate Access, Hazard and Safe Zones.
2. Ensure only qualified personnel are assigned on-line work
3. Ensure the work is properly supervised and regularly monitored to verify that work continues in a safe manner
4. Document employee work experience
5. Prepare or approve the access permit
6. Determine that conditions are safe for on-line work

7. Ensure that all employees on site are wearing appropriate Personal Protective Equipment (PPE)
 8. Determine that the rescue service is available and the means to summon them are operable.
-

15 Training

The information below sets out the Core Competencies for operators carrying out rope access work using the PowerQuick Powered Ascender. They are also the competencies that will be assessed when an operator applies for Rope Access Training Certificate. The assessment tests the candidate against these competencies in both a practical and a written/oral examination.

15.1 Level 1 Worker

All operators should be competent to complete the following:

- Load and operate the PowerQuick Powered Ascender in both the ascent and descent mode.
- Inspect and comment on rope access rigging, anchors, knots and equipment.
- Demonstrate an understanding of the requirements for working on roofs.
- Demonstrate an understanding of the OSHA safety codes.
- Ability to demonstrate tying basic knots.
- Identify and comment on potential hazards encountered when rope access used on a worksite.
- Perform self-rescue.
- Demonstrate an understanding of the requirements for public protection when working at height.

15.2 Level 2 Technician

In addition to being competent in all aspects of the Level 1 requirements candidates should also be competent to:

- Prepare and implement a risk assessment and Safe Work Method statement
- Demonstrate a thorough knowledge of worksite organization.
- Demonstrate a thorough knowledge of equipment usage and maintenance.

Complete the following safely, maintaining a minimum of two points of contact at all times:

- Demonstrate rigging ropes using a selection of anchors and equipment.
- Demonstrate hauling and lowering systems.
- Demonstrate retrieval of unconscious or injured workmate from ascending gear.
- Demonstrate long rope transfer using 2 back up devices.
- Demonstrate horizontal traversing.

15.3 Level 3 Supervisor

Pre-requisites for Level 3:

- Experienced Level 2 in a wide variety of worksites.
- Senior first aid certificate.
- Demonstrate all above L1/L2 requirements safely with finesse.

Minimum L3 competency:

- Complete written paper detailing complete project and regulatory requirements in industry worksite/task of their choice e.g. urban, confined space, electrical etc.
- Demonstrate good management, supervision and communication skills. Complete the following safely, maintaining a minimum of two points of contact at all times:
- Demonstrate advanced rigging techniques using a selection of anchors and equipment in various work situations.
- Demonstrate haul/cross haul/lowering of a load (could include workmate).
- Demonstrate retrieval of unconscious or injured workmate from awkward access/lead climbing in various work situations.
- Demonstrate horizontal and vertical lead climbing.

16 3.0 Industrial Rope Access Site Checklist (Sample)

Location: _____ Date: _____

	YES	NO	N/A
Is an appropriate Hazard ID and Risk Assessment document present for the tasks being performed?			
Are instructions available for any proprietary anchor systems being used?			
Have all access personnel been briefed on their tasks and responsibilities?			
Do all personnel have sufficient safety and protective equipment for their tasks. E.g. masks, goggles, gloves, hearing protection?			
Have all areas of public or trades access to the base and anchorage locations of the work site been suitably signed and barricaded. (Also check for balconies)?			
Is an RCD (earth leakage device) being used with any 240V power tools?			
Access Rigging			
Are two independently anchored ropes being used for each person?			
Will the primary anchors sustain a force of 12 kN?			
Does the proprietary anchor system have sufficient counterweights to sustain a load of 12 kN? (This information should be available in the contractor's site documentation).			
Do the ropes reach the ground or a suitable landing site and are they fitted with stopper knots or similar?			
Is sufficient padding of edges used to eliminate the chance of rope damage?			
Are any deviation anchors of adequate strength?			
Do any weather conditions (eg. wind) create a need for lateral restraint, or other precautions?			
Has fall protection/prevention been arranged in the case of anchors being less than 2mtrs from a dangerous edge?			
Personal specific			
Are all personnel qualified and correctly supervised?			
Are the access workers all wearing full body harnesses?			
Are the workers attaching themselves to both ropes before they suspend themselves?			
Do the descender devices have a 'dead man' hands off function?			
Are all workers wearing suitable helmets?			
Are suspended workers able to communicate with another person at all times?			
Does all equipment being used appear to be in good condition?			

Are all tools secured to prevent dropping?			
Are all tools over 8kg weight independently suspended?			
Is a steel lanyard making the connection to the safety rope in the case of cutting or grinding works?			
Other, job specific			

Rope Access Team Leader:

_____ Signature: _____

If any of the above boxes are marked NO, work should be halted until sufficient explanation can be provided.

It is the legal responsibility of the building manager or site foreman to ensure this work is carried out in an appropriate manner.

Please use this area to address any issues raised on the front page of this document.

Issue raised	Explanation of actions	Changes to work method where required

Issues resolved to the satisfaction of all parties.

Manager/Foreman:

Name _____ Signature _____ Date _____

Rope Access Team Leader:

Name _____ Signature _____ Date _____

17 Detailed Inspection Requirements for Equipment

17.1 Absorbers

17.1.1 Condition of the Rope/Condition of the Webbing

Carry out a visual check of the sheath, looking for cuts, a furry appearance, or burns. Then carry out a tactile check, to find soft or hard points. If you find one of these, alter the geometry; the curve should be regular.

17.1.2 Condition of the Stitching

Check that the stitching is not worn, cut or deformed. Move any protective sleeving or other devices in order to check the hidden sections.

17.1.3 Condition of the Body

Check that the body is free from cracks, marks, deformities or traces of corrosion.

17.1.4 Condition of the Connectors

See the “connectors” sequence.

17.1.5 Condition of the Stitching Protector

Check that the protector gives effective protection to the stitching and allows the connector, or carabineer to remain in the correct position.

17.1.6 Condition of the Fixing System of the Braking Rope

Check that the hoods and the plastic attachment are not broken or missing.

17.1.7 Compatibility of the Textile Part with the Metal Part and the Connector

Check the textile part has not been replaced. Check that the connectors meet ANSI or other safety requirements.. .

17.1.8 Check of the Energy Absorption Function

For sliding energy absorbers such as the ZYPER and ZYPER Y, slide the rope through the metallic component and check for the absence of any deposits on the rope. Warning, a deposit on the sheath (paint, sprayed concrete, . . .) prevents the absorption of energy. For ‘tear-apart’ energy absorbing systems, pull back the Lycra protection and check that the webbing is not torn.

17.2 Anchors

17.2.1 Condition of the Webbing

Check along the entire length of the anchor that there are not cuts, traces of wear or burns. Do not forget to check at the level of the anchor buckles and under the adjustment buckle.

17.2.2 Condition of the Stitching

Check that no threads are cut, torn, stretched, burnt or worn.

17.2.3 Condition of the Anchor Buckles and Adjustment Buckles

Look for any marks: look for the cause; sharp tools, impacts. This analysis will provide information on the history of the product. Beware there is no trace of wear or corrosion without forgetting the hidden parts.

17.2.4 Operation of the Adjustment

Check that the webbing runs correctly in the buckle and test the jamming. If it does not run properly, clean the webbing and carry out the test again.

17.3 Ascenders (mechanical devices used for self-rescue.)

17.3.1 Condition of the Body and the Anti-Return Stop

Check that the body is free from cracks, deformities. They are the sign of a fall or factor higher than one(1). Beware there are no trace of wear or corrosion. Pay particular attention to the area where the rope runs, level with the holes. Check also for any deformities that may be present on the upper part of the body. Check for any deformities that may be present on the upper part of the body. Check for deformities of the anti-return stop (sign of a fall factor higher than one).

17.3.2 Condition of the Cam

Check that all the teeth are present and their state of wear. If the teeth are worn, test the operation of the rope clamp/grab on a muddy rope. Beware there is no trace of carrion. Inspect the condition of the rivet.

17.3.3 Condition of the Security Catch

Check that the catch is not broken. Check its pin.

17.3.4 Check on the Rope if Sliding upwards and Jamming when Pulled Downwards

For this check, use the different diameters of rope as advised (at least the diameters of rope that you use). Check that the rope clamp/grab slides up the rope easily and that it jams when it is pulled downwards.

17.3.5 Effectiveness of the Spring of the Cam

Clean with a brush and soapy water and, if necessary, oil with silicone. Oil the pins and the spring. Warning, wipe the friction components with a rag.

17.3.6 Effectiveness of the Spring of the Security Catch

Clean with a brush and soapy water, if necessary, oil with silicone. Oil the pins and the spring. Warning, wipe the friction components with a rag.

17.3.7 Opening of the Security Catch

Check that the safety catch opens completely on the body of the rope clam/grab.

17.4 Hardware Connectors

Visual Check of the Body, of the Hook or Nose of the Connector, of the Closing Gate, of the Rivet and of the Sleeve. On the connector, look for any cracks, marks: look for the cause; sharp tools, impacts. This analysis will provide information on the history of the product. Check that the connector is free from deformation, wear. For a connector, a wear mark more than 1 mm deep is serious. Beware there is no trace of corrosion which may be present on the body. Pay particular attention to the angles, to the hood and to the gate. Check that the rivet and the sleeve are present and check their condition.

17.4.1 Check of the Correct Alignment of the gate with the Hook

Operate the gate and check the correct alignment of the gate with the hook.

17.4.2 Check of the Effectiveness of the Return Spring and of the Articulation of the Gate

Check that the spring fulfills its function and that the articulation of the gate works correctly. Clean with a brush and soapy water and if necessary oil with silicone, oil the pins and the spring. Warning, wipe the friction components with a rag.

17.4.3 Operation of the Locking System

Finally, ensure that the locking system works properly. Clean with a brush and soapy water and if necessary oil with silicone oil.

17.4.4 Operational Test on the Rope

Finally, always carry out a test on the rope: test the braking on a new rope, test the work positioning function on a new rope and test the anti-panic function. The aim of these tests is to check the behavior of all the functions of the device on a new rope (the most unfavorable situation because of its lower coefficient of friction). For your safety, be sure to carry out this test with back-up protection from a lanyard or a mobile fall arrest device.

17.4.5 Fall Arrest

OSHA REGULATIONS REQUIRE that any worker exposed to a fall hazard is required to have fall protection. Refer to CFR29-1926; 500-503 Sub-part (M) Fall Protection. Three key components of the Personal Fall Arrest System must be in place and properly used to provide maximum worker protection.

17.4.6 Connecting Device

The Connecting Device is the critical link which joins the body wear to the anchorage/anchorage connector. Individually these components will not provide protection from a fall. Used properly in conjunction with each other, however, they form a Personal Fall Arrest System that becomes vitally important to safety on the jobsite.

17.5 Harness

17.5.1 Body Harness Attachment Instructions

1. Before using any fall protection equipment first read the information contained in the instructions provided with the equipment you are using. Warning: Improper use of safety equipment can cause serious injury or death.
2. Hold the harness by the Nylon Ring or D-Ring depending on the style of the harness you have. Shake out the harness to make sure that there are not tangles or twists in the straps.
3. With shoulder strap buckles facing forward, put on the harness as you would a jacket. The D-Ring or Nylon Ring should be properly located on your back. Adjustments are easier if you get help when first setting up the equipment.
4. Adjust both right and left side shoulder straps so they are in the position shown, with adjustment buckles facing forward.
5. Attach chest strap to keep shoulder straps parallel and held in position so the harness cannot slip off in a fall.
6. Attach leg strap buckles for a snug fit. Make sure that all straps are free of twists, tangles, or knots. The harness should fit comfortably.
7. The area on the harness where the Nylon Ring or D-Ring is attached is called the Chafe Pad. It should be located just below your shoulders in the center of your upper back area.
8. Attach the carabineer through the fabric web loop at the end of the shock absorber or connecting lanyard. Then attach the Rope Grab Knot to the carabineer through the plastic Rope Thimble. **BE SURE THE CARABINER IS LOCKED.**
9. With Rope Grab Knot attached to the shock absorber or connecting lanyard, the grab knot should be located below your waist and above your knee.

17.5.2 Warning

Do not attach a rope grab device or lifeline directly to the D-Ring or Nylon Ring on the chafe pad. A connecting lanyard is required. Never attach a snap hook to the plastic eye thimble of the rope grab knot or lifeline.

17.5.3 Inspection Procedures

Safety equipment must be inspected by the users prior to each use, and employers should schedule regular examinations by a "competent" person to ensure that defective equipment is not in service.

Remove from service if any of the following defects are found:

1. Nylon webbing has any tears, rips, cuts, burns or chemical contamination.
2. Stitching is loose, frayed, cut or has two pieces of webbing are pulled apart.
3. Shoulder and leg strap buckles or D-Rings are bent, cut, or deformed.
4. Velcro chest strap will not stick to itself.
5. Warning and serial number labels are missing.
6. Shock absorber is deployed or plastic cover is damaged or missing.
7. Chafe pad is damaged, elastic fabric keepers are missing.

NOTE: If the equipment is subjected to an "in service" fall, it must be removed immediately and inspected before returning to service.



17.5.4 Condition of the Webbing

The webbing straps are subject to damage; check that they are free from cuts. Any cut means the systematic rejection of the harness. Beware there is no trace of wear (fluffiness, stiffness). Traces of wear give information on the use of the harness, general wear for normal ageing, local wear following a fall, an incorrect adjustment, contamination, . . . The stiffness can come from repeated contact with a chemical product, concrete spray, sand, . . . This analysis allows the condition of the harness to be assessed. Beware there is no burn or trace of chemicals which damage visually the webbing.

Start with the belt. Check the condition of the webbing in front/behind, level with the adjustment buckles and where webbing straps cross.

Check the condition of webbing in the tie-in loops (in front, behind, on the sides, on the inside); the tie-in loop is a critical area.

On the shoulder straps webbing, pay very close attention to the position of the connector, the buckles and where the webbing crosses. Do not forget parts which are hidden by the buckles, the rear piece and the spreader.

On the webbing which joins the belt to the leg loops, check in the front, behind and in particular the points where the webbing crosses. The crossing points of webbing are critical areas where the first signs of wear appear.

17.5.5 Condition of the Load-Bearing Stitching

Check the load-bearing stitching carefully. These are generally heavy-duty stitching of different color to the webbing. Warning, some stitching is hidden by webbing straps. Do you notice any threads which are cut, stretched or worn? When stitching is stretched, check there is not cut thread.

17.5.6 Condition of the Attachment Buckles

Check on the attachment buckles at the front, sides, chest and rear positions that there are no marks: look for the cause; sharp tools, impacts . . . This analysis will provide information on the history of the product. Beware there is not deformation, crack or trace of corrosion.

17.5.7 Condition of the Fastening Buckles

Check that all the fastening buckles are free from marks, deformities, cracks or traces of corrosion: look for the cause; sharp tools, impacts . . . this analysis will provide information on the history of the product. Beware there is no deformation, crack or trace of corrosion. Warning, a mark can cause rapid wear of webbing. For the "FAST" type buckles, check that the metal parts are free from traces of corrosion. Also check that the polycarbonate parts are free from cracks.

17.5.8 Compatibility and Condition of the Connector

Check that the connector is original or of equivalent strength and in good condition. To do this, refer to the "connector" sequence.

17.5.9 Condition of the Protectors

Certain types of harness are fitted with protectors (tubular sheath/PVC coating). Check that they still provide effective protection to the load bearing webbing.

17.5.10 Condition of the Comfort Components

Check the non load-bearing stitching. Do you notice any threads which are cut, stretched or worn? It is sometimes difficult to differentiate between load-bearing and non load-bearing stitching. If you are in doubt as the advice of a specialist or check it as if it were load-bearing stitching

17.5.11 Functional Check

For the rapid-action FAST buckles, check particularly the correct operation of the return spring. Check that the webbing is correctly routed through the "DOUBLE BACK" fastening buckles. Operate the fastening buckles. Adjustment must always be possible. Clean the webbing. For your comfort and safety, your harness must always be perfectly adjusted.

17.6 Helmets

17.6.1 Condition of the Outside of the Shell

The inspection of the helmet starts with the check of the condition of the outside of the shell. On the upper part, look for evidence of impact, cracks, or burns, as well as any signs of damaged caused by chemicals. Do the same around the base of the shell.

17.6.2 Condition of the Inside of the Shell

Check the condition of the inside, paying more attention to the base, particularly the reinforcement. Check that none of the ridges are broken or deformed. Then make sure that there are no cracks, marks or deformities on the sides.

17.6.3 Condition of the Cradle

Check the headband by feeling to ensure that the stiffness has not been lost and there are no broken zones. Inspect all the webbing straps for any trace of wear, cuts or burning. Do not hesitate to move the retaining loops and the plastic buckles to look at all parts of the webbing straps. Then check that the stitching of the straps is not cut or distorted. Finally check the main fastening buckle, the sliders and the plastic components.

17.6.4 Condition of the Cradle Fixings

Ensure that the adjustment wheels do not slip. Check the headband fixings level with the two clips and two rivets. Then check the four fixing-points of the cradle.

17.6.5 Condition of the Padding of the Headband

If the padding is torn or very dirty, you can replace it.

17.6.6 Condition of the Headlamp Clips

Check that the headlamp fixing clips are present and in good condition.

17.6.7 Operation of the Headband Adjustment

Use the adjustment wheel to tighten the headband as far as possible, and then pull the headband to check that it does not loosen. If the adjustment does not work, the product must be rejected. Warning, do not pull the headband too hard, the purpose of this test is not to check the strength of the adjustment.

17.6.8 Operation of the Nape of the Neck Adjustment

Operate the adjustment wheel to check that the rack mechanism works, then pull on the webbing and check that it does not loosen. Warning, do not pull the webbing too hard, the purpose of this test is not to check the strength of the rack mechanism.

Operation of the Fastening and Unfastening of the Chin Strap and its Adjustment

Open and then close the buckle. Check that it is well fastened. This is not a test of the strength of the buckle. According to the helmet model, the chin strap buckle may release between 15 and 25 kg (EN 397 industrial helmets) or it may release between 50 kg (mountaineering and other helmets). These values correspond to the requirements of the standard, or to specific technical requirements. Check the adjustment. If the strap cannot be adjusted, clean the webbing. For your safety and comfort, the helmet must always be perfectly adjusted.

17.7 Lanyards

17.7.1 Type of Lanyard

Two types of lanyard exist; lanyards constructed entirely from textile materials and textile lanyards with metallic devices.

17.7.2 Condition of the Rope/Condition of the Webbing

Carry out a visual inspection of the sheath to detect cuts, a fluffy appearance, or burns. Then carry out an inspection by touch to find hard or soft points. If you find one of these points, alter the position of the rope, the curve must be regular. Move rope protectors and other devices in order to check hidden parts. Carry out the same inspection with webbing components.

17.7.3 Condition of Stitching

Inspect the load-bearing stitching in order to find cut or distorted stitching, or traces of wear.

17.7.4 Condition of Sidepieces, Friction Components and Locking

Check that the sidepieces are free from marks: look for the cause; sharp tools, impacts. . . This analysis will provide information on the history of the product. Beware there is no crack and trace of wear or corrosion. Check the passage of the connector. Then check the condition of the friction components and finally the condition of the rivets and the locking screw.

17.7.5 Check of the Freedom of the Moving Parts to Rotate

The moving part is free of its axis. Clean with a brush and soapy water and, if necessary, oil the pin with silicone oil. Warning, wipe the friction components with a rag.

17.7.6 Condition of the Protective Components

Check the condition of the strings and the stitching and rope protectors.

17.7.7 Compatibility of the Lanyard with the Metal Part and with the Connector/Condition of the Connector

Ensure that the textile part corresponds to the metal part and that the connectors are suitable. To check the condition of the connectors, refer to the "connector" sequence.

17.7.8 Check of the Adjustment of the Lanyard

Check the proper operation of the adjustment of the lanyard.

17.7.9 Check of the Operation of the Connector

Finally check the proper operation of the lanyard's connectors.

17.8 Pulleys

17.8.1 Condition of the Safety Elements: Body/Moving Side-Pieces/Sheave Grooves/Rivet Axles

It is important to thoroughly check the sidepieces for any cracks or marks (seek out their cause: sharp tools, impacts . . . this analysis will give information on the history of the product). Check for deformation, traces of wear and of corrosion on the inside as well as the outside. Then check the sheaves for wear (sharp edges or deeply-cut grooves are dangerous) and the condition of the axles. For models with an anti-return cam (PROTRAXION and MINITRAXION) check the presence and the condition of all teeth.

17.8.2 Operation Check of the Pulley, the Connection and the Opening of the Side-Pieces

Ensure that the sheave turns correctly, that the connection is in good condition and that the moving sidepiece operates freely. For models PROTRAXION and MINITRAXION, check that the moving sidepiece locks correctly. Clean with soapy water and a brush and lubricate the axles and moving parts if necessary, using a silicone lubricant, then wipe the friction zones with a rag. This maintenance is recommended after each time the device is used in the rain or in an aquatic environment. Ball-bearing mounted pulleys do not require lubrication. On the models PROTRAXION and MINITRAXION, check the correct operation of the return springs of the cam and of the red catches.

17.9 Ropes

17.9.1 Condition of the Sheath

The first check is visual: check the condition of the sheath over the full length of the rope. Look particularly for any evidence of cuts, of wear, or of burning, fuzzy sections or traces of chemicals. Check also for the presence of slippage of the sheath over the core.

17.9.2 Tactile Check of the Core

Carry out this check by applying a curve of constant radius all the way along the rope, by hand. Vary the curvature between the fingers: are you able to detect stiff sections, soft sections or marked angles? Any angle will allow you to identify a zone where the core is broken or deteriorated, or will show the presence of a bulge caused by a "hernia" in the core.

17.9.3 Condition of the Protective Parts

Check the condition of protective parts covering stitching or knots.

17.9.4 Condition of Stitching

At the stitched terminations, check that no threads are cut, torn, distorted or worn. If there is a protective cover, pull it back to look at the safety stitching.

17.9.5 Condition of Knots

Check your rope at the point of the various knots, by untying them to check their condition (wear and shape).

17.9.6 Check the Length

To easily check the length of a rope, double it, double it again, and then measure it and multiply the result by four.

18 Referenced Publications

The PowerQuick and designated accessories are designed to comply with the following documents. Operators are required to review and adhere to these and other requirements that may pertain to your particular industry or operations. This list is not inclusive. It is the user's responsibility to be aware of these additional requirements.

18.1 Laws, Regulations, Codes

The equipment sold hereunder is designed and manufactured to comply with provisions of:

- EN 292-1:1991 Safety of Machinery - Basic Concepts, General Principles for Design - Part 1: Basic Terminology, Methodology-Superseded by EN ISO 12100-1:2003
- EN 292-2:1992 Safety of machinery Basic concepts, general principles for design Part 2: Technical principles-Supersedes BS EN 292-2:1991

- EN 418:1002 Safety of Machinery. Emergency Stop Equipment, Functional Aspects - Principles for Design (F) [Superseded by: BSI BS EN ISO 13850]
- EN 953:1997 Safety of Machinery - Guards - General Requirements for the Design and Construction of Fixed and Movable Guards
- EN 1050:1996 Safety of Machinery - Principles for Risk Assessment [Superseded by: BSI BS EN ISO 14121-1]
- BS EN 14861: 2004 Forest machinery. Self propelled machinery. Safety requirements
- EN 50260-1: 2002 Safety of Hand-Held Battery-Powered Motor-Operated Tools and Battery Packs - Part 1: General Requirements
- ED 418:1992 Safety of Machinery. Emergency Stop Equipment, Functional Aspects - Principles for Design (F) [Superseded by: BSI BS EN ISO 13850]
- prEN 1005-1:1996 Safety of Machinery - Human Physical Performance - Part 1: Terms and Definitions
- prEN 1005-2:1996 Safety of machinery Human physical performance Part 2: Manual handling of machinery and component parts of machinery
- prEN 1808:1998 Safety Requirements on Suspended Access Equipment - Design Calculations, Stability Criteria, Construction – Tests
- EN 1927-1-8:2005 Safety requirements for cableways installation designed to carry persons. Ropes. Long splicing of 6 strand hauling, carrying hauling
- US Federal Spec RR-S-001301 Safety Equipment, Climbing: 22 June 1967
- MIL-S-87966 Safety Equipment
- B.C. Reg. 585/77 8.100 Canada Health & Safety Code
- AS/NZS 4488.1:1997 Industrial rope access systems – Specifications
- AS/NZS 1891:2007 Industrial fall-arrest systems and devices Part 1: Harnesses and ancillary equipment
- CSA Z 259.2.3:1999 Descent Control Devices
- ASTM F 887 Standard Specifications for Personal Climbing Equipment

Use instructions were prepared using the following Guidelines:

- BS 7985: 2002 British Standard Code of Practice The use of rope access methods for industrial purposes.
- Industrial Rope Access Trade Association (IRATA) 2000 Guidelines on the use of rope access for industrial purposes
- AS/NZS 4488.1,2 Australian/New Zealand Standard & AS/NZS 1891
- Society of Professional Rope Access Technicians “Safe Practices for Roped Access Work”
- Canadian Safety Agency “Industrial Health & Safety Regulation”
- US 29 CFR Non-Mandatory Guidelines for Complying with 1926.502(d) – 126, Subpart M APP C
- US 29 CFR 1910.268 Special Industries

The following additional documents were reviewed and evaluated for application to the PowerQuick technology and adopted where they apply.

- B. C Reg. 101/2004 Safety Standards Act: Elevating devices safety Regulation
- B. C Reg. 585/77 Workers Compensation Act: Industrial Health and Safety Regulation, Section 8.100- 8.1178
- ASTM F 887-97 Standard Specifications for Personal Climbing Equipment
- California Occupational Health & Safety Agency, Subchapter 7, 3720-1 Use of rope access Equipment
- California Department of Transportation: Climbing Techniques for Bridge Inspection
- Canadian Association of Geophysical Contractors – CAGC Best Practices 2003

Safety elements and general climbing instructions in the Operations Manual are provided as general guidelines ONLY and DO NOT supersede Federal, State, or other requirements or the guidelines of Professional Associations which may have jurisdiction for your specific industry or in your particular area. Compliance with all federal, state or local laws or regulations is the responsibility of the user.

Service Contract & Maintenance Options

1 Product Support

This contract is to provide periodic preventive maintenance and certification of the PowerQuick Ascender to ensure its continued safe, reliable operation. PowerQuick, Inc. and our approved maintenance facilities provide an exceptional level of pre- and post-sales support for all products. Highlights of this service include:

- Customer Service personnel available by phone to provide answers to all your operational and technical questions.
- Training provided through our Certified Trainers Program.
- Two service contract options that provide different levels of coverage depending on your individual needs.
- A loaner program to make sure you are never down while your ascender is being maintained and certified.
- A cost-effective upgrade program to make sure you always have the latest, most efficient powered ascender on the market.

2 Contract Specifications

PowerQuick, Inc. (Company) warrants to the Purchaser that the products being sold hereunder have the capacities and rating set forth in the product specifications and are free from defects in material and workmanship for a period of one year or 3.4 miles/6K (20,000 rotations as measured by the odometer on the unit) of use, whichever comes first. The Ascender must then undergo inspection and recertification by a PowerQuick, Inc. qualified maintenance facility under one of the Maintenance Options described in Section 5. Once recertified, the warranty is extended to the next certification period. Maintenance (other than preventive maintenance described in the PowerQuick Operations Manual for each model) performed by any other person or company voids all warranties. This contract goes into effect upon close of sale and is transferable. If the Ascender changes ownership, the new Purchaser should contact the nearest authorized service center immediately.

2.1 Limits of Liability

This coverage includes all internal parts or components as supplied by the manufacturer and does not include any liability for special, indirect or consequential damages. The Purchaser's sole remedy for performance or non-performance under these plans is limited to the replacement of parts and associated labor as would be required under the service agreement. There are no warranties of merchantability or otherwise which extend beyond the description enclosed in this contract and those expressly stated in these conditions.

2.2 Exclusions

PowerQuick, Inc and/or our authorized distributors shall not be liable or responsible for any claims or charges associated with any loss of, or failure of the covered equipment that is directly or indirectly caused by or resulting from any of the following:

- Law or ordinance
- War, military or police action; insurrection, rebellion or revolution
- Fire, smoke or explosion
- Rust, corrosion and/or sediment damage
- Damage from immersion in water or other corrosive element
- Failure to abide by manufacturer's recall
- Misuse and/or tampering of the equipment for any purpose other than intended by the manufacturer.
- Failure to perform normal, routine or seasonal maintenance, adjustments and/or service as may be outlined in the installation and servicing instructions or owner's manual.
- Normal wear and tear to accessories used with the ascender

Ancillary equipment not covered under this Service Contract:

- Batteries
- Chargers
- Accessories

PowerQuick, Inc does not warrant equipment manufactured by others, but will submit to buyer upon request the manufacturer's warranty, if any, and will assist buyer in securing the benefit of such warranty if inspection proves such parts defective.

In no event, whether as a result of breach of warranty or otherwise, shall PowerQuick, Inc, or our authorized distributors be liable for special or consequential damages. No warranty is included against any expense for consequential damages arising from use of the PowerQuick ascender or any defect. Owing to the widely varying conditions under which our products are used PowerQuick, Inc cannot be and are not bound, and no person is authorized to bind PowerQuick, Inc. to any further warranty whatsoever, express or implied.

3 Term of Contract

This contract goes into effect upon close of sale and is effective for the life of your PowerQuick Ascender, as long as the unit is maintained under a service contract as defined in Section 5 "Contract Options". Rates may be updated on a year-to-year basis. You will be notified of any rate changes in advance. This contract is transferable. If the Ascender changes ownership, the new Purchaser must contact the nearest authorized service center immediately.

4 Record keeping/Maintenance Reports

Each PowerQuick Ascender has a unique serial number that is maintained in a central database used by all maintenance facilities worldwide. This database is a permanent record of all information related to your ascender including owner information, maintenance record, etc. and is maintained for the life of your PowerQuick Ascender. When an ascender is returned to the authorized maintenance facility it undergoes a complete diagnostics on PowerQuick, Inc's proprietary test equipment. This equipment measures every detail of the PowerQuick Ascender performance and safety and provides the maintenance technician with a detailed report. Once maintenance is completed, the unit is again subjected to diagnostic testing as part of the Quality Assurance program. The customer is provided with a printout of the pre and post maintenance test report. This report will include the date, pre-maintenance odometer reading, and the odometer reading and/or date for the next scheduled maintenance. These reports, as well as a record of all maintenance procedures or upgrades performed, are maintained in the permanent database. Owners may request a copy of the record on their ascender at any time from an authorized service center.

A "certification" tag will be placed on the ascender that indicates the maintenance date and provides the odometer reading indicating when the next required maintenance is due.

5 Service Contract Options

As with all mechanical equipment the PowerQuick Ascender is subject to wear under normal use. Depending on use conditions and environments, individual components and parts may wear at different rates. For this reason, we have developed a flexible multi-phase maintenance program that is tailored to individual user needs. Rates and service schedules are provided in the table following the description of the options.

5.1 Comprehensive 24-Hour On-Site Service

All approved PowerQuick maintenance facilities provide the option for 24-hour on-site field replacement. This option was designed for frequent users who purchase the Comprehensive warranty Service Contract and includes a "loaner" Ascender for use while the Owner's unit is being maintained or repaired. This Option also provides for diagnostics and replacement of normal wear items associated with general maintenance such as capstan, bearings, seals, brake pads, etc. every 3.4 miles of use. Defective parts will be replaced solely at the discretion of the company. This Option also provides for a rebuild of the Ascender in the 11th maintenance cycle. All services are at a discounted price.

5.1.1 Loaner Ascender

An Ascender for use while the Owner's unit is being maintained or repaired is included at no additional charge with Comprehensive Option. The unit must be returned to PowerQuick, Inc. within three days from receipt of repaired ascender or will be accessed a rental fee of \$200 per week. Shipping box will include a postage paid label for return.

5.1.2 Field Response

In most cases field response is a last resort activity that most companies will use only when time is of the essence and there is no other way to provide on-site delivery or service.

1. Labor rates will be billed to the project on the basis of the hourly rates of the personnel assigned to the project:
 - a. Working hours are from 8:00 a.m. to 5:00 p.m., PST, Monday through Friday. During these hours the STANDARD labor rate will be in effect as set forth in the enclosed Schedule of Rates.
 - b. Work performed before 8:00 a.m. and after 5:00 p.m., PST, Monday through Friday, will be charged at O/T-1 labor rate (1.5 time STANDARD labor rate) as set forth in the enclosed Schedule of Rates.
 - c. Work performed on Saturdays and Sundays will be charged at O/T-1 labor rate (1.5 times STANDARD labor rate) as set forth in the enclosed Schedule of Rates.
 - d. Work performed on holidays will be charged at O/T-2 labor rate (2.0 times STANDARD labor rate) as set forth in the enclosed Schedule of Rates.
 - e. Travel time for will be charged at the STANDARD labor rate for travel on Monday through Friday, O/T-1 for travel on Saturday and Sunday, and O/T-2 for travel on U.S. holidays.

2. Expenses:

- a. Travel, living, and operating expenses incurred by Company personnel as a consequence of work performed for a client will be charged at actual costs.
- b. Air travel will be on Company's choice of airlines utilizing the most expeditious flights available.
- c. Travel to a client's job site in personal vehicles will be charged on a per-mile basis according to following Schedule of Rates.

5.2 Standard Preventive Maintenance and Certification

This service is performed at a PowerQuick Certified Maintenance Facility. PowerQuick owners may either take their ascender to the facility in person or ship the ascender to the facility. Field service is available with this option, but at a higher rate than the Comprehensive option.

This Option provides for, diagnostics and replacement of normal wear items associated with general maintenance such as capstan, bearings, seals, brake pads, etc. every 3.4 miles of use. Defective parts will be replaced solely at the discretion of the company. This Option also includes a rebuild of the Ascender in the 11th maintenance cycle.

Standard Maintenance time is 5 working days.

This service is best suited for users who do not use the unit on a daily basis.

5.3 Reestablished Service

This Option is for purchaser's who have allowed their maintenance contract to lapse or who opted not to purchase a maintenance plan.

5.4 Replacement/Product Upgrades.

In the event that the technician determines that the PowerQuick ascender is not repairable (or is not cost effective to repair) as a result of normal wear and tear or user-induced damage, owners will receive a discount on a replacement unit.

From time to time PowerQuick, Inc. will develop upgraded parts or components for the PowerQuick Ascender. These components may be replaced automatically for owners with a Service Contract, at no additional cost to the owner, during the regular maintenance cycle.

PowerQuick, Inc. will also introduce upgraded versions of the ascender. Owners who wish to upgrade to the new version during the regular maintenance cycle will be offered a trade-in discount prorated to the life of their current ascender.

Service Contract Options And Prices			
Program Feature	Basic Service PQS 0001	Comprehensive Service PQS 0002	Reestablished Service PQS 0003
Annual Fee	\$500	\$2500 per contract. \$500 per additional ascender. Limited to 5 ascenders per contract.	No Annual Fee
Preventive Maintenance Every 3.4 miles/use			
Inspection/replacement of capstan, bearings, seals.	Inspect capstan, bearings, seals. Replace as needed	Replace general Maintenance Items	
Recertification	\$200	\$150	Time and Materials
On 11th Service Inspection/replacement of capstan, bearings, seals. Inspection/replacement of major components as needed.	Inspection/replacement of capstan, bearings, seals. Inspection/replacement of major components	Inspection/replacement of capstan, bearings, seals. Inspection/replacement of major components	
Recertification	\$300	\$150	Time and Materials

Loaner Ascender	\$500*	Included in Service Fee*	
Initial Phone Response	24-hour	24-hour	Weekdays 8 am to 5 pm
On-site Response		\$25/hr 8:00 a.m. to 5:00 p.m., PST, Monday through Friday \$37.5/hr Before 8:00 a.m. and after 5:00 p.m., PST, Monday through Friday	
Certification to Reestablish Expired Warranty	N/A	N/A	Inspection/replacement of capstan, bearings, seals. Inspection/replacement of major components \$800 plus Time & Materials
Replacement/Upgrade			
When damaged beyond safe repair or when upgrading to a new version	\$Actual material and man-hours costs	\$Actual material and man-hours costs not to exceed \$3,000	Full Retail Cost

* Loaner for time of repair. To be returned within 3 days of receipt of repaired ascender or subject to rental charges of \$500 per week.

6 Invoicing

Upon credit approval, PowerQuick, Inc. will invoice the client for the services performed and materials supplied, and the expenses incurred by PowerQuick, Inc. personnel on assignment to the client to the extent described in this contract and the Schedule of Rates, published and enclosed as part of this Service Contract. All invoices are net and payable in U.S. dollars drawn on a U.S. bank within thirty (30) days of the date of the invoice. At its discretion PowerQuick, Inc. reserves the right to require full or partial payment in advance. Invoices not paid in accordance with the terms set forth above are subject to interest charges at the rate of 1 1/2 percent per month, unless prohibited by law, in which case invoices will be subject to interest at the maximum legal contract rate.

7 How to Request Service

For the standard maintenance option, package your ascender and ship it with a Request for Service to your authorized service center. A maintenance request form is located at the end of this contract. It is also available for download from our web site at www.powerquickinc.com.

In the case of field service, a written purchase order on company stationery, or its equivalent, indicating the location and scope of the work to be performed is required before Company personnel can be dispatched to a client's job site, whether an operating plant, shipyard, marina, or a waterborne vessel underway or at dockside.

The purchase order, for either field service or plant service, must be executed by those authorized to enter into such contracts in the name of the client. In emergency situations, verbal requests may be honored; however, a written purchase order marked CONFIRMING must be provided as soon as possible thereafter. A purchase order from a client will constitute acceptance of all terms and conditions in this contract. Any oral or written purchase order submitted to and accepted by PowerQuick, Inc. or an authorized maintenance facility will be subject to and be deemed to incorporate by reference the terms and conditions set forth in this service contract. No additional or different terms will apply unless expressly agreed to by the maintenance facility in writing. Acceptance of or payment for any services constitutes Buyer's agreement to the terms and conditions contained in this service contract.

8 Safety Devices, Legal Requirements

Seller shall not be required to furnish any safety devices required by law or otherwise, except those specified herein, seller does not warrant or guarantee that the equipment sold hereunder will comply with local, state or federal laws or regulations or electrical, building or other codes or requirements.

9 Indemnification

Buyer shall comply and require its employees to comply with all instructions given by PowerQuick, Inc. regarding installation, use and maintenance of the equipment described herein and shall require its employees to use reasonable care and utilize all safety devices in the operation and maintenance of said equipment. Buyer shall not remove or permit removal or modification of any safety devices or warning signs or labels, Buyer shall immediately give PowerQuick, Inc. written notice (within 24 hours of occurrence) of any personal injury or property damage arising out of the use of the equipment and cooperate with PowerQuick, Inc. in investigating any such accident or malfunction. Buyer agrees to indemnify and hold PowerQuick, Inc. and its suppliers and distributors harmless from any and all claims, demands, liabilities, causes of action, suits, costs and expenses of any kind and nature (including attorney's fees) for personal injury and/or property damage arising from or in any way connected with the operations activities or use of the equipment described herein.

Buyer agrees to indemnify and hold PowerQuick, Inc. and its suppliers and distributors harmless from any and all claims, demands, liabilities, causes of action, suits, costs and expenses of any kind or nature (including attorney's fees) for loss or damage to persons or property, arising out of use of the ascender and accessories.

10 Cancellation

Buyer may cancel this maintenance contract upon notification in writing to PowerQuick, Inc or an authorized distributor or maintenance facility. Cancellation will, however, void all future warranties for the PowerQuick ascender.

11 Contract Acceptance

Purchaser elects the following maintenance Option:

- Standard Preventive Maintenance and Certification
- Comprehensive 24-Hour On-Site Service
- We Decline a Maintenance Contract at this Time

The undersigned hereby agree to the terms and conditions of this contract.

Purchaser

Sales Representative

Title _____

Title _____

Date _____

Date _____

Request for Service Form (available for download at www.powerquickinc.com)

Company Name

Contact: _____
Address: _____

Phone Number: _____
E-Mail: _____

Product Information

Ascender Model

Serial Number

Odometer Reading

Date Shipped:

Service Requested Standard Preventive Maintenance & Recertification Repair Other

Have you experienced any specific problems with your PowerQuick Ascender? (*describe*)

Payment Method

Credit Card: Master Card Visa American Express Purchase Order
 Wire Transfer: (Call for account Information) Bank Draft

Name On Card: _____ Expiration Date: ____/____/20____

Purchase Order #: (*with approved Credit or CC #*) _____

Billing Information

Address: _____

Shipping Information (if different from billing)

Address: _____

For Office Use Only

Received By: _____

Received Date: _____

Work Order # _____

Assigned To: _____

QA/QC Inspector: _____

Ship Date _____



NOTES

